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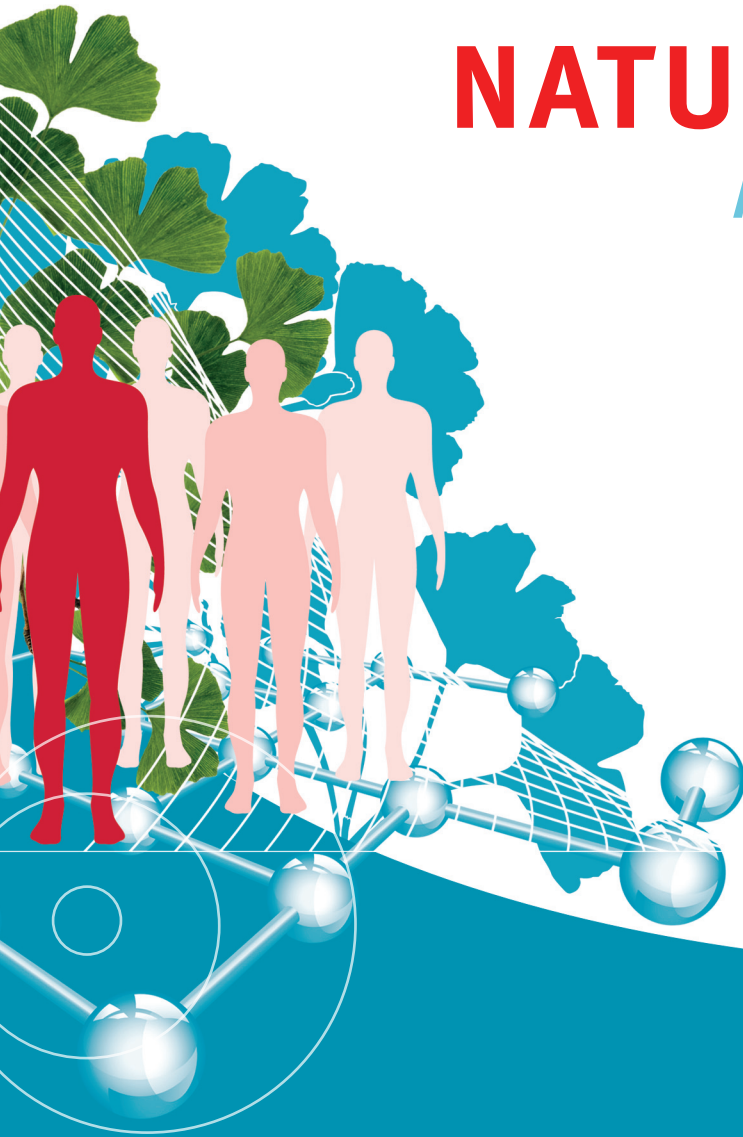
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An evidence-based
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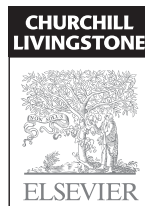


Jerome Sarris
Jon Wardle

Clinical Naturopathy: **an evidence-based guide** **to practice**

Clinical Naturopathy: an evidence-based guide to practice

Jerome Sarris • Jon Wardle



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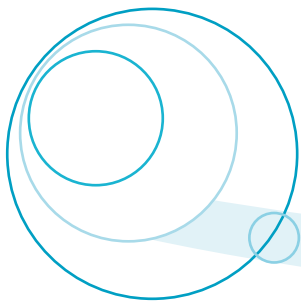
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Naturopathic case taking

Greg Connolly
BA, ND

NATUROPATHIC PHILOSOPHY AND PRINCIPLES

For naturopaths, the patient-centred approach to case taking with its emphasis on rapport, empathy and authenticity is a vital part of the healing process. It is based not just on current accepted health practices but on the philosophy and principles that have underpinned naturopathy since its beginnings. This chapter examines how to establish and maintain a therapeutic relationship with patients through the process of a holistic consultation in the light of these values and practices. This chapter also presents a model of the structure and process of holistic case taking that will facilitate this consultation and provide both patient and naturopath with the knowledge and insight needed for healing and wellness.

Historical precursors

Having a philosophy by which to practice gives a clearer understanding of what constitutes good health, how illness is caused, what the role of the practitioner should be, and the type of treatments that should be given.¹ Naturopathy has a loosely defined set of principles that have arisen from three interrelated philosophical sources. The first main source is the *historical precursors* of eclectic health-care practices that formed naturopathy in the 19th and 20th centuries.² Allied to this are two other essential philosophical concepts intertwined with the historical development of naturopathy: *vitalism*^{3,4} and *holism*⁵.

The tenets of naturopathic philosophy have developed from its chequered historical background, which includes the traditions of Hippocratic health, herbal medicine, homoeopathy, nature cure, hydrotherapy, dietetics and manipulative therapies.⁶ In modern times naturopathic philosophy has borrowed from the social movements of the 1960s and 1970s that fostered independence from authoritative structures and challenged the dependency upon technology and drugs for health care. These social movements emphasised a holistic approach to the environment and ecology with a yearning for health care that was natural and promoted self-reliance harking back to late 19th-century principles of nature care philosophy.⁷ Naturopathy also borrowed from other counterculture movements and began to be suffused with New Age themes

of transpersonal and humanistic psychology, spirituality, metaphysics and new science paradigms.⁸ Since the 1980s naturopathy has increasingly used scientific research to increase understanding of body systems and validate treatments.^{9,10}

From this variety of sources, naturopathy has consolidated a number of core principles. These principles have had many diverse adherents and an eclectic variety of blended philosophies. Notwithstanding this, there are key concepts within naturopathy that are agreed upon and are flexible enough to accommodate a broad range of styles in naturopathic practice.¹¹

The historical precursors of naturopathy emphasise the responsibility of the patient in following a healthy lifestyle with a balance of work, recreation, exercise, meditation and rest; eating healthily, and having fresh air, water and sunshine; regular detoxification and cleansing; healthy emotions within healthy relationships; an ethical life; and a healthy environment. These views highlight the fact that each patient is unique and, in light of this, naturopathic treatments for each patient are tailored to addressing the individual factors that cause their ill health. An essential part of a holistic consultation is the education of the patient to promote healthy living, self-care, preventive medicine and the unique factors affecting their vitality.¹²

Vitalism

A fundamental belief of naturopathy is that ill health begins with a loss of vitality. Health is positive vitality and not just an absence of medical findings of disease. Health is restored by raising the vitality of the patient, initiating the regenerative capacity for self-healing. The vital force is diminished by a range of physical, mental, emotional, spiritual and environmental factors.¹³

Vitalism is the belief that living things depend on the action of a special energy or force that guides the processes of metabolism, growth, reproduction, adaptation and interaction.¹⁴ This vital force is capable of interactions with material matter, such as a person's biochemistry, and these interactions of the vital force are necessary for life to exist. The vital force is non-material and occurs only in living things. It is the guiding force that accounts not only for the maintenance of life, but for the development and activities of living organisms such as the progression from seed to plant, or the development of an embryo to a living being.¹⁵

The vital force is seen to be different from all the other forces recognised by physics and chemistry. And, most importantly, living organisms are more than just the effects of physics and chemistry. Vitalists agree with the value of biochemistry and physics in physiology but claim that such sciences will never fully comprehend the nature of life. Conversely, vitalism is not the same as a traditional religious view of life. Vitalists do not necessarily attribute the vital force to a creator, a god or a supernatural being, although vitalism can be compatible with such views. This is considered a 'strong' interpretation of vitalism. Naturopaths use a 'moderate' form of vitalism: *vis medicatrix naturae*, or the healing power of nature.¹

Vis medicatrix naturae defines health as good vitality where the vital force flows energetically through a person's being, sustaining and replenishing us, whereas ill health is a disturbance of vital energy.³ While naturopaths agree with modern pathology about the concepts of disease (cellular dysfunction, genetics, accidents, toxins and microbes), naturopathic philosophy further believes that a person's vital force determines their susceptibility to illness, the amount of treatment necessary, the vigour of treatment and the speed of recovery.¹⁶ Those with poor vitality will succumb more quickly, require more treatment, need gentler treatments and take longer to recover.¹⁷

Vis medicatrix naturae sees the role of the practitioner as finding the cause (*tolle causum*) of the disturbance of vital force. The practitioner must then use treatments that are gentle, safe, non-invasive techniques from nature to restore the vital force; and to use preventative medicine by teaching (*docere*—doctor as teacher) the principles of good health.¹⁸

Vitality and disease

Vitalistic theory merges with naturopathy in the understanding of how disease progresses (see Table 1.1). The *acute* stages of disease have active, heightened responses to challenges within the body systems. When the vital force is strong it reacts to an acute crisis by mobilising forces within the body to ‘throw off’ the disease.¹⁷ The effect on vitality is usually only temporary as the body reacts with pain, redness, heat and swelling. If this stage is not dealt with appropriately where suppressive medicines are used the vital force is weakened and acute illnesses begin to become *subacute*. This is where there are less activity, less pain and less reaction within the body, accompanied by a lingering loss of vitality, mild toxicity and sluggishness. The patient begins to feel more persistently ‘not quite right’ but nothing will show up on medical tests and, in the absence of disease, the patient will be declared ‘healthy’ in biomedical terms. If the patient continues without addressing their health and lifestyle in a holistic way they can begin to

EFFECTS ON HEALTH AND VITALITY

- Constitutional strength—familial, genetic, congenital
- Diet—excess and deficiency
- Fresh air, water, sunlight, nature
- Lifestyle—work, education, exercise, rest, recreation
- Disease
- Injury
- Toxaemia—external (such as pollution, pesticides and drugs) and internal (such as metabolic byproducts and cell waste)
- Organs of detoxification—liver, kidney and lymph
- Organs of elimination—bowel, gallbladder, bladder, respiratory, skin
- Emotions and relationships
- Culture, creativity, arts
- Philosophy, religion and an ethical life
- Community, environment and ecology
- Social, economic and political factors

Table 1.1 Stages of disease

STAGE	ACUTE	SUBACUTE	CHRONIC	DEGENERATIVE
Symptoms	Pain, heat, redness, swelling, high activity, discharges, sensitivities	Lowered activity, relapsing symptoms	Persistent symptoms, constant discomfort, accumulation of cellular debris	Overwhelmed with toxicity, cellular destruction, mental and spiritual decay
Toxicity	Toxic discharges	Toxic absorption	Toxic encumbrance	Toxic necrosis
Vitality	Temporarily weak vitality	Variable vitality, ill at ease, not quite right, sluggish	Poor vitality, malaise, susceptible to other physical, mental or spiritual distress	Very low vitality, pernicious disruption of life processes at all levels

experience *chronic* diseases where there are long-term, persistent health problems. This is highlighted by weakened vitality, poor immune responses, toxicity, metabolic sluggishness, and the relationships between systems both within and outside the patient becomes dysfunctional. The final stage of disease is *destructive* where there are tissue breakdown, cellular dysfunction, low vitality and high toxicity.¹⁹

In traditional naturopathic theory the above concepts emphasise the connections between lowered vitality and ill health. Traditional naturopathic philosophy also emphasises that the return of vitality through naturopathic treatment will bring about healing. The stages of this healing are succinctly summarised by Dr Constantine Hering, a 19th-century physician, and these principles of healing are known as Hering's Law of Cure.^{19,20}



HERING'S LAW OF CURE

- Healing begins on the inside in the vital organs first, from the most important organs to the least important organs. The outer surfaces are healed last.
- Healing begins from the middle of the body out to the extremities.
- Healing begins from the top and goes down the body.
- Retracing—healing begins on the most recent problems back to the original problems.
- Healing crisis—as retracing and healing take place the body will re-experience any prior illness where the vital force was inappropriately treated. In re-experiencing the symptoms the patient will awaken their vitality and have an inner sense that the cleansing 'is doing them good'. A healing crisis is usually of a brief duration.

Holism

Another essential principle of naturopathy developed from its eclectic history is the importance of a holistic perspective to explore, understand and treat the patient. Holism comes from the Greek word *holos*, meaning whole.^{21,22} The concept of holism has a more formal description in general philosophy and has three main beliefs.²³ First, it is important to consider an organism as a whole. The best way to study the behaviour of a complex system is to treat it as a whole and not merely to analyse the structure and behaviour of its component parts. It is the principles governing the behaviour of the whole system rather than its parts that best elucidate an understanding of the system.

Secondly, every system within the organism loses some of its characteristics when any of its components undergo change. The component parts of a system will lose their nature, function, significance and even their existence when removed from their interconnection with the rest of the systems that support them. An organism is said to differ from a mere mechanism by reason of its interdependence with nature and its parts in the whole. For instance, any changes that occur in the nervous system can cause changes in other systems such as musculoskeletal, cognition and mood, and digestion. Or, more widely, any changes that occur in social relationships have an effect on the nervous system and vice versa.

Thirdly, the important characteristics of an organism do not occur at the physical and chemical levels but at a higher level where there is a holistic integration of systems within the whole being. There are important interrelations that define the systems and these may be completely missed in a 'parts-only perspective'. These interrelations are completely independent of the parts. For instance, the digestive tract is functional only

when its blood supply, nerve supply, enzymes and hormones are integrated and unified by complex interrelationships.

In naturopathic health care, holism is the understanding that a person's health functions as a whole, unified, complex system in balance. When any one part of their human experience suffers, a person's entire sense of being may suffer.

PATIENT-CENTRED APPROACH TO HOLISTIC CONSULTATION

*One of the most difficult duties as a human being is to listen to the voices of those who suffer ... listening is hard but fundamentally a moral act.*²⁴

The holistic consultation and treatment of the whole person includes emotional, mental, spiritual, physical and environmental factors, and it aims to promote wellbeing through the whole person rather than just the symptomatic relief of a disease. To best enhance this holistic consultative process a 'patient-centred' approach is used. This is where the emphasis is on patient autonomy; the patient and practitioner are in an equal relationship that values and respects the wants and needs of the patient.²⁵ The role of the practitioner is to develop a therapeutic relationship of rapport, empathy and authenticity to serve the patient's choices and engender the healing process.

An essential component of developing a therapeutic relationship with the patient is the ability to listen.²⁶ Naturopaths must never forget that each patient is an individual with their own unique story of illness and treatment. The patient needs to be allowed to tell that story and in turn the naturopathic practitioner needs to listen with sensitive, authentic attention and empathy. This disciplined type of therapeutic listening bonds the patient and practitioner and enhances the effectiveness of treatment.²⁷

When patients feel listened to, they open up and declare hidden information that can be clinically significant to the type of treatment given and to how well that treatment works. A clinical example is where a stressed final year secondary student wanted 'something natural' to help her sleep. As she spoke about her situation, another deeper narrative slowly unfolded in which she divulged that she had been sexually assaulted by an ex-boyfriend and her current anxiety centred upon thoughts of self-harm. The act of listening not only deepened rapport and established trust and empathy but also led to better clinical support for her with a referral to a psychologist.

If a naturopath does not holistically enquire into the causes of a patient's presenting complaint and merely follows a protocol—in this case, an insomnia prescription—they may be, at the very least, clinically ineffective in treating insomnia or, worse, prolonging the patient's suffering and increasing her risk of self-harm.

A practitioner needs to be aware that a holistic consultation is not a routine event for the patient. It is dense with meaning and can represent a turning point for them.²⁸ Fully listening to a patient's concerns in a patient-centred holistic consultation helps the naturopath to explore and understand what is at stake and why it matters so much.²⁹ With this knowledge it is then possible to provide appropriate and effective treatment. Establishing rapport, empathy and authenticity in a patient-centred holistic consultation also enhances the practitioner's ongoing ability to assess recovery and to achieve the patient-centred aim of independent self-care.³⁰

This therapeutic relationship depends upon the practitioner being proficient in consulting skills, communication skills and counselling skills. This chapter now focuses on consulting skills and the reader is recommended to the 'Further reading' section at the end of this chapter for texts discussing communication skills and counselling skills.

It should also be noted that some patients present to clinic with little or no prior understanding of what the naturopathic consultation involves. Some preliminary steps can be taken to facilitate a better understanding for the patient. Initially, a practitioner's website can provide explanatory details of naturopathic philosophy, treatment modalities and the consulting process. This can be reinforced with clinic brochures in the reception area of the clinic. As the holistic consultation begins the practitioner can sensitively enquire as to the patient's level of understanding of naturopathy and what their expectations about the consultation are.

Phases of the holistic consultation

Adapting the Nelson-Jones³¹ model, there are five phases to the holistic patient centred consultation. These are to:

1. *explore* the range of problems
2. *understand* each problem
3. determine the *goals*
4. provide *treatments*, and
5. consolidate the patient's *independence*.

In a brief acute case of a minor condition, such as a minor head cold, these five phases can be completed over a single session. In a complex case with multiple pathologies and a myriad of personal issues, the phases discussed below can occur and recur over a long period of time and completion may entail many sessions.

Explore

The task here is to establish rapport with the patient and to help the patient reveal, identify and describe their problems. The naturopath can facilitate this by providing a structure for the interview and fostering an ambience where the patient's views are valued and important. The naturopath's empathy with the patient will sensitise the practitioner to the tone, pace, depth and breadth of their enquiry into the patient's health issues. The enquiry should be patient-centred, where the patient sets the parameters of what they feel comfortable discussing while the naturopath maintains a heightened awareness of the clinical significance of what they are saying—or indeed not saying. The patient in this process has an opportunity to share their thoughts and feelings and for the naturopath to join with them in identifying the problem areas in their health from a holistic perspective.

Understand

Understanding the problems involves a focused attempt to gather more specific details of the problems experienced by the patient. The naturopath's facilitation skills will help the patient accurately focus on symptoms while also using the naturopath's clinical skills in physical examination, body sign observations, reviewing medical reports and completing a systems history to gain and impart a holistic overview. The knowledge gained from this helps the patient to acknowledge areas of strength and weakness in their health and to develop new insights and perceptions that will help them to relate to their health issues holistically. It is also appropriate in this phase to seek referrals for further diagnosis where necessary from biomedical or allied health professionals.

Set goals

The next step is to work with the patient to negotiate goals and strategies to achieve positive outcomes for their health. The naturopath needs to discuss with the patient the types of modalities that can be used and which treatments are expected to be efficacious. It is appropriate at this juncture to give a prognosis of what can be reasonably achieved within a specified time. The patient has now an opportunity to ask questions, discuss costs and be in an active position to make an informed choice in setting goals and deciding on the best treatment options. The patient should be encouraged to acknowledge their active participation in their health improvement. They can also discuss with the naturopath their preferences for various modalities, and the naturopath can highlight what they can expect as their health improves.

Treatment

The task now is to assist the patient in gaining better vitality, building health resources and skills, and lessening health deficits. The patient's role is to acquire self-help skills. Active encouragement is crucial in developing and maintaining the patient's self-motivation. Encourage the patient to acquire books, internet resources and community resources and to undertake courses to further self-support the recovery. The issues of compliance, or how well the patient can follow a treatment plan, can be discussed with the patient in a supportive way by identifying any possible difficulties. The treatment plan may need to be modified or strategies developed to ensure the patient gains the full benefit of their treatment program.

Potential barriers to treatment need to be anticipated, assessed and discussed, with contingencies put in place within the treatment plan to account for these. For example, if the treatment goal is weight loss and exercise is suggested as a primary treatment strategy, then the attitude of the patient towards exercise needs to be assessed. If those potential barriers are anticipated, plans can be suggested that overcome them and improve compliance, for example by exercising with a friend rather than alone.

Also in this phase the need for 'follow-up' is assessed. The patient may require further appointments to refine the processes of exploring, understanding, goal setting and treatment of their health issues. At this point, referrals to other practitioners for treatment may also be necessary where it can be seen that this would be beneficial.

Independence

The final step in the patient-centred therapeutic process is to consolidate the patient's independence. The task is to ensure the patients have the necessary self-help skills and are prepared for the naturopath's helping role to end. At this stage, both the naturopath and the patient review the progress and goal achievements. The naturopath can assist the patient plan independent control of their health. The patient should be encouraged to share their thoughts on their own progress, as well as any exit issues, such as their readiness for self-management. The patient now can consolidate all their learning and is ready to implement self-help skills in daily life.

STRUCTURE AND TECHNIQUE OF CASE TAKING

Basic case-taking skills take 1 or 2 years to develop and a diligent naturopath over the years will be constantly improving and refining techniques.³² It may be overwhelming in the first few cases for novice practitioners, especially if the case (or the patient!) is complex. At times a patient may be difficult, angry or demanding and a practitioner



FROM NOVICE TO EXPERIENCED NATUROPATH

Novice naturopaths: tend to use learned protocols that give treatment programs for a disease or syndrome.

Advanced beginners: soon find that the 'one-size-fits-all' approach, besides being counter to naturopathic philosophy, is problematic and begin to adapt and vary the protocols to each patient.

Competent naturopaths: begin to develop their own independent strategies for patients.

Professional naturopaths: develop treatments based on traditional learning, evidenced-based practice and their intuition in selecting treatments that best align with the patient's individual holistic causes of ill health.

Experienced naturopaths: are immersed in an intuitive proficiency where they understand tradition and evidence; can listen carefully and sensitively to the patient's issues; adapt readily and easily to the patient's personality; motivate and educate the patient; are aware of the nuances in patient rapport, red flags and need for referrals; and are calm, gentle and understanding in the face of uncertainty and suffering.

Source: Adapted from Boon et al. 2006.³³

needs to have insight and strategies for dealing with this (see 'Further reading' at the end of this chapter, which highlights useful texts discussing these issues).

Novice practitioners may wish to begin any case, no matter how chronic or complex, by starting with a good case history of one key ailment that bothers the patient. This is designated as the 'presenting complaint'.³⁴ For example if the patient has five health issues to discuss, negotiate with the patient what is most important to them to work on first.

The presenting complaint

- *Location:* Ask about the nature of the problem. Get an idea of the physical, emotional, spiritual and environmental dimensions of the problem. Note if it affects a certain location of the anatomy or a physiological system. Be aware that certain conditions have multiple locations, such as arthritis or systemic lupus erythematosus (SLE).
- *Onset:* Ask about the factors that seemed to initiate or trigger the problem. In a holistic manner, enquire as to what was occurring for the patient before and at the start of the problems. When did the problems first start?
- *Course:* Ask whether the problem seems to be constant (there all the time with minimal variation) or fluctuating (there all the time but varies in presentation and intensity) or intermittent (it stops and starts or happens occasionally). The treatment of headaches, for example, could be quite different if they are constant or fluctuating or happen twice a week or twice a year.
- *Duration:* Ask when the problem first started if it has been constant or fluctuating, and also how long an episode of the problem endures if it is intermittent.
- *Sensation/quality:* Ask the patient to describe in their own words how the patient experiences their symptoms via the five senses of feeling (such as ache, burn, numb, pinch, stab, throb, hot, cold, itch, anxious, sad, dizzy, nauseous, twisting, wrenching or tingling); sight (such as colour, consistency, texture or shape); sound (such as crepitation, rattling, gasping, rumbling or buzzing), odour (such as fetid, ketosis, fishy,

yeasty or sharp) and taste (such as bitter, salty, rancid, bloody or metallic). Note that a loss of any sensation is also clinically significant.

- *Intensity*: Ask about how mild, moderate or severe the problem is. Be aware that different personalities may under-report or over-report the severity. You can get the patient to give it a score out of 10 to make a useful comparison on follow-up visits.
- *Modalities*: What makes it better or worse? Time of day, week, season, or year; situation, such as in bed, at work, in hot weather; or certain activities may trigger it; or certain emotional or spiritual crises may trigger the problem.
- *Radiates*: Does the problem shift, extend or move around one location or between other locations?
- *Concomitants*: When the problem occurs is there any other part of the person that seems to be affected? Examples are irritability with hot flushes; loss of appetite with depression; and headaches with existential crises.
- *Past history*: In an acute case this can be a previous history of this presenting complaint. It can also include a general past history of all health issues.
- *Family history*: As above, this can be a family history of the presenting complaint as well as a general history of all health issues in the family.
- *Medications*: Include all medical, naturopathic, Chinese medicine and other health modalities, including self-prescribed supplements. It often occurs that the presenting complaint is directly linked to a side effect or interaction of medications.
- *Diet*: Discuss a typical day's diet. For a more comprehensive approach the naturopath can give the patient a diet diary to record their diet and symptoms over a 1- or 2-week period and review this in a follow-up appointment.
- *Observation of body signs and relevant physical examinations* (refer to Chapter 2 on diagnosis).
- *Timeline*: The information gathered can also be represented in the format of a timeline that illustrates the sequence of events.

This single issue case-taking process can take 20–45 minutes for novice practitioners in the early days of training or practice. It is always important not to spend an overly long time in getting the case details. There has to be sufficient time also for explaining the holistic diagnosis and naturopathic understanding of why this problem is occurring; treatment goals; prognosis; remedy preparation and label instructions; doing the account; and booking the patient for the next appointment. Bear in mind that the patient is likely to be unwell, tired, in pain or have restless children in tow and it is a strain on the patient to have them there for 1 or 2 hours while trying to pack too much into the first session. It is more appropriate to use the second and third appointments to gather further information. Psychologists, for example, may spend at least the first five to 10 sessions getting a general background and then may spend the next year or more listening to the patient's life narrative on a once-a-week basis.

Holistic review

As part of a holistic consultation it is essential to enquire into a broad range of factors. This is where the consultation moves beyond the presenting complaint.³⁵ It encompasses a review of the patient's:

- past history
- family history
- lifestyle history
- mind/emotion/spirit history, and
- body systems.

This can be done in any order that seems most comfortable between practitioner and patient. A holistic assessment is made of the patient's vitality and symptoms by exploring the physical, mental, social and spiritual factors that affect them. A simple model of holistic assessment is first to explore the factors affecting the patient's constitutional strength, which are the physical and mental attributes they are born with. This includes genetics, temperament and the inherent strengths and weaknesses of different physiological systems. Secondly, factors that occur over time are considered. These include the family and culture that the patient grew up with and the socioeconomic status and environment that they live in. They also include the types of diseases or traumas the patient has had, the diets and lifestyle they have followed and the patterns of adaptive behaviour that they have adopted. Thirdly, a holistic assessment needs to consider important, dramatic events that have overwhelmed an otherwise healthy person, such as severe stress, trauma or toxicity. Fourthly, the factors that trigger disturbances to vitality such as stress, injury, infection, toxicity, allergens and drugs need to be considered. Finally, a holistic assessment of the factors that sustain ongoing health issues, such as psychological, social, economic, environmental and ecological factors, is made.³⁶

Galland³⁷ cautions that care must be taken in holistic assessments. Careful listening to the patient is required, as the range of possibilities is extensive. The assessment needs to be comprehensive as there can be multiple factors that reinforce each other and the practitioner needs to constantly reassess the patient who has complex symptoms to avoid misdiagnosis. The practitioner also needs to be flexible as the same symptom in two different people, for example joint pain, may have different triggers; conversely, the same trigger, for example hot weather, may induce headache in one person and asthma in another.

Past history

- General level of vitality and health in infancy, childhood, teens, twenties and subsequent decades; the effect on vitality of life stages such as puberty, education, relationships, marriage, pregnancy, parenting, work, menopause/andropause, retiring
- Immunisations, vaccinations, reactions
- Allergies, intolerances
- Childhood illnesses; either minor but persistent, or major, episodes requiring medical supervision, hospitalisation, surgery, medication
- Major illnesses, accidents, genetic issues, hospitalisations, disabilities
- Past use of medications

Family history

- Major diseases, syndromes and level of vitality that affect family members
- Causes of mortality in family
- Familial, hereditary, genetic issues

Lifestyle history

- Exercise, fitness, coordination, mobility, flexibility, strength, stamina, aerobic capacity
- Recreation, entertainment, rest, holidays
- Alcohol consumption, coffee/tea consumption, smoking, recreational drug use
- Daily exposure to toxins, pollutants, chemicals
- Education
- Work conditions (exposure to toxins; stress, injury)
- Home conditions

- Social, economic, financial and political conditions
- Health issues with class, race, religion or gender
- Travel
- Military service

Mind/emotion/spirit

- Life satisfaction; relationships; connectedness to friends, family, colleagues, community, society
- Reactions to stress, grief, trauma; coping mechanisms; resilience, vulnerability
- Moods, perceptions, sensitivities, motivation, will, intensity, personal characteristics, attachments, obsessions
- Attitudes, optimism
- Mental capacities, performance, confidence, procrastinations, decision making ability
- Speech, gesture, posture, thinking, feeling, behaviour
- Creativity, arts, music, dance, theatre, sculpture, hobbies, collecting
- Religion, spirituality, philosophy, self-discovery, ethics, purpose of existence, world view, meditation, revelation, prayer, metaphysics
- Spiritual and cultural issues in health care

Body systems

In each of these sections, if there are relevant symptoms to discuss then follow the format as given regarding the presenting complaint, such as location, duration, onset, course, sensation and so forth:

- *general*: fatigue, pallor, fever, chills, sweats; proneness to infection; allergies, intolerances; weight, posture, build; age, stage of life; gender
- *gastrointestinal*: problems with mouth, gums, tongue, oesophagus, swallowing, reflux, eructation, stomach pain, gastritis, ulcers, bloating, fullness, appetite, nausea, vomiting, cramping, flatulence, stool (frequency, consistency, colour, odour, blood), haemorrhoids, fissures; infections (viral, bacterial, fungal, protozoal); polyps, tumours
- *hepatic-biliary*: jaundice, cirrhosis, gallstones, abnormal liver function tests, bile duct inflammation or obstruction, right shoulder or flank pain, ascites
- *respiratory*: pain; difficulty or obstruction in breathing; wheezing, shortness of breath; cough; sputum; smoking; asthma
- *head/neurologic*: headaches, migraines, dizziness, fainting, epilepsy, head trauma, confusion, memory loss; eyes (vision, discharge, pain, redness, change in appearance of eye such as unequal pupils, cataracts, glaucoma)
- *ear, nose, throat*: pain, hearing problems, sense of smell, sense of taste, sinus, rhinitis, allergens, discharges, change in voice, gums, teeth, lips, tongue, tonsils, adenoids, mouth ulcers
- *cardiovascular*: chest pain; palpitations, arrhythmias; oedema; dyspnoea; blood pressure; cholesterol; anaemia; blood disorders; claudication; varicosities; circulation—cold hands/feet; bruising; bleeding
- *lymph nodes*: sore, swollen, infected
- *endocrine*: pituitary/hypothalamus; thyroid (hyper and hypo symptoms); thymus; pancreas (pancreatitis, diabetes, hypoglycaemia); adrenal (Addison's, fatigue, immune, oedema); ovary/testes
- *female*: breast—pain, tender, lumps, change in appearance, galactorrhea; menses, menarche, hormonal contraceptives, frequency, duration, volume, colour, consistency, pain, PMT; libido, sexual function, pain, itch, discharge, infections, Pap smears,

surgery, investigations, uterine, ovarian, fallopian, cervical, vaginal; polycystic ovarian syndrome, endometriosis; fertility, pregnancies, births; menopause, hot flushes, headaches, mood, vaginal dryness, weight gain

- *males*: infection, discharge, lesions, sexual dysfunction (libido, erection, ejaculation), pain, infertility, testes, prostate (benign prostate hyperplasia, prostatitis, cancer), varicocele, phimosis, balanitis
- *genitourinary*: frequency, volume, colour, odour, infections, blood, urgency, incontinence, pain (flank, suprapubic, urethral), rigors; dribbling, hesitancy; calculi; kidneys, ureters, bladder, urethra; abnormal urinary test results; renal effects on sodium, blood pressure, acid/base balance, fluid retention
- *peripheral neurologic*: weakness, abnormal sensation, numbness, coordination, locomotor, paralysis, tremor
- *musculoskeletal*: bone deformities, ligament, tendon, muscle, joints, discs, inflammation, pain, swelling, redness, hot, cold, stiffness, crepitation, range of motion, functional loss
- *Skin, hair, nails*: rash, itch, eruption, discharge, flaking, erosive, pitting, peeling, lumps, cysts, change in colour, texture, shape; hair loss, dandruff.

In chronic, complex cases with multiple symptoms and pathologies it may take two or three sessions to get a complete and accurate history. As a novice practitioner gains more experience, all the details of complex cases can be gained in one to two sessions.

POSOLOGY

Posology is the determination of the appropriate dosage of remedies for the patient. In general terms if a patient has good vitality they can handle the rigour of more remedies at higher doses and more aggressive treatment regimens of exercise and detoxification if required. For those patients with moderate vitality their treatment is modified with milder doses of tonics and supplements in an effort to strengthen vitality and prevent relapses occurring. Patients with weakened vitality are best administered treatments that offer gentle relief of symptoms and the mildest of programs to support the affected systems. This is done through toning, building and adaptogenic remedies.

These general guidelines for dosages and range of remedies are modified by the *pace*, *intensity*, *location* and *natural history* of the illness. First, vary the treatment according to the pace of the symptoms. The dosage and range of remedies will vary according to the symptoms being slow and sluggish as compared to symptoms that are rapid in onset. Secondly, the intensity of the symptoms dictates that a higher dose is required for symptoms of a florid, aggressive nature with a potential for pathological sequelae. The naturopath may also have to factor in that some patients are particularly stressed by the symptoms and demand more urgent treatment programs than is necessarily required. Thirdly, the location of the illness may change the posology as symptoms in the eye, for example, are more sensitive than in the heel of the foot. Fourthly, treatments will vary according to the natural history of an illness where dosages change between the onset, middle and resolution of an illness.

SIGNPOSTS FOR RECOVERY

Patients always ask ‘When will I get better?’ Prognosis is the forecast of the course of a disease. With illnesses that are familiar, such as a head cold, it is relatively predictable how long it takes for symptoms to resolve with treatment. As a novice practitioner progresses through their career and experiences a wider range of patients, the ability to give an

accurate prognosis of a variety of health problems improves. However, there are always instances when it is very difficult to predict how a patient's illness will respond to treatment and over what period of time. In instances of difficulty with predicting how long a patient will take to recover it is better to approach the issue from another angle. That is, rather than trying to give the patient a definitive time frame of amelioration of the illness it is better to give estimations of what signposts or stages the patient is expected to experience and leave the issue of duration open-ended. This prevents the frustration a patient may experience when told they should be better by a certain date but they are not.

The first signpost for recovery is that the condition has stabilised and is no longer deteriorating. Secondly, the intensity of symptoms begins reducing. Thirdly, the symptoms are no longer constant. Fourthly, the symptoms no longer fluctuate. Fifthly, there are longer periods of intermittence and, if they do return, the symptoms are milder and of shorter duration. And finally there is remission or cure. The patient is asked to watch for these stages as signs of improvement. Discuss with the patient the fact that it is often too difficult to give an exact time estimation as to how long each stage of recovery will take.

To assist in prognostic skills the following practice tips will be useful. For a known disease or syndrome there is excellent information in pathology texts and medical journals that indicates the natural history of a disease—that is, how a disease behaves and over what period of time. Secondly, check the naturopathic information from academic notes, texts, journals and seminars on the action of naturopathic remedies and how long these remedies take to reduce symptoms. Also enquire further from senior naturopathic colleagues, mentors and academic staff who can give information of how this disease normally behaves and how it responds to the proposed treatments. Thirdly, having established a good knowledge of how the disease behaves and the efficacy of the treatments, make an assessment of the patient's capabilities and compliance with following the treatment plan. This is where a holistic understanding of the patient's vitality, preferences for modalities and personal circumstances will help in judging when the patient will improve.

CASE TAKING—THE RETURN VISIT

Novice practitioners can sometimes feel confusion as to what they are supposed to say or do in the return visit. For 'follow-up' of acute, minor cases, use the guidelines below. For 'follow-up' of complex, chronic cases see the following section, 'Case taking—advanced'.

At the end of the first session

The return visit is made easier for novice practitioners if they get into the habit of making notes at the end of the initial visit as a reminder of what needs to be done at the next session. At the end of the first visit history form, make a box with the heading 'Follow-up'. In this box write down any items the practitioner promised the patient to look into. Also in this box write down the patient's symptoms to review in follow-up; for example, check temperature, mucus (colour, consistency), sneezing and fatigue to compare with the first session to gauge treatment response. Also write in this box any other issues that the practitioner or the patient wanted to explore for the second session but did not get time for in the first session.

What to do in the second session

Before the patient arrives the practitioner needs to re-familiarise themselves with the patient's case. This can include the patient's personal and social anecdotes of things that they were going to be doing during the week, such as family functions, outings with

friends, work issues or relationship issues. To quickly re-establish rapport the practitioner can remind themselves of how the patient was feeling in the first session.

An important feature of the follow-up session is to review the patient's symptoms. This enables the practitioner to make comparisons of the patient's progress and to gauge the effectiveness of the treatment program. Make new notes on what changes have occurred in signs and symptoms since the previous visit. It may be necessary to repeat any physical examinations that were done in the first session, such as vitals. The practitioner needs to enquire how the patient managed with the remedies and lifestyle advice and check whether the patient was taking the remedies in the manner prescribed.

If acute symptoms have resolved, then reiterate to the patient holistic, preventive measures to maintain good health and to avoid the symptoms reoccurring. If acute symptoms have not resolved, then explore the reasons for this. Confirm that the original diagnosis and naturopathic understanding were correct. This may require referrals to other health professionals for further diagnostic assessment and testing. Check antecedents, triggers and mediators as discussed earlier. For example, the patient may still be under the same stresses at work, or their diet may need further support. Check materia medica selection and posology and that the patient knows how to take the remedies properly; check patient compliance or any difficulties with taking the remedies, managing the diet or following exercise programs. Check information on the expected prognosis and natural history of the condition. That is, how long does a particular condition normally take to clear up? For example, some sinus conditions take a few weeks to heal and there may be little change in the first week. Often the reason for lack of improvement is obvious and it is easy to make adjustments to the treatment program or support the patient with ways to achieve their health goals. At other times, there are cases that, even with the best intentions of the practitioner and the patient, are not responding very well. It is appropriate here to seek the patient's permission to discuss their case with colleagues or a mentor with experience in similar cases. It can happen that the practitioner needs to refer the patient to another modality that might have more success with that particular condition. For example with persistent back pain the patient can be referred to remedial massage, chiropractic, physiotherapy or osteopathy.

The second visit also allows the opportunity to discuss if there are any other different issues or symptoms not mentioned in the first visit. First, ask the patient if there are other concerns they have that they wish to talk about. This needs to be done every session. It may take some patients many repeated sessions to gain the trust to discuss sensitive issues like a past history of bulimia, sexual abuse or a worrisome ailment they feel embarrassed about. The practitioner can also initiate discussion on any issues that are apparent, for example if the patient looks pale or jaundiced or their thyroid looks swollen, or has signs of body systems under stress that were not part of the initial discussions.

The second session allows completion of any further history that may have not been obtained in the first session or going into issues in more depth if that seems appropriate. At the end of the second session the practitioner always has to remember to draw up a 'Follow-up' box on the end of the history forms so they know what needs to be done in the third session. This needs to be done for every subsequent session.

CASE TAKING—ADVANCED

Getting the details of chronic complex cases requires careful attention. As previously stated getting these details could take a number of sessions for novice practitioners. The written data obtained need to be accurate, comprehensive and easily recoverable. The

practitioner should be able to quickly find any data on any question from any session because all the data are put into specific locations in the history form.

The case history requires the patient's words verbatim if possible. However, this does not mean that every word is written in the order that the patient has said it. Patients tend to talk by random association where one thing reminds them of something else and will jump from topic to topic and back again. The skill is allowing this to occur to obtain rich information but also to do three other things simultaneously. The first is to write or type fluently key words or phrases while maintaining eye contact and rapport. The second is to write in such a way that the practitioner does not end up with line after line of the patient's words on a blank sheet in a disorganised fashion. After six or seven sessions there will be 10 or 20 pages of notes and it is very embarrassing when it takes 5 minutes to check some detail the patient has asked about! Instead, the history forms should have predefined sections where the patient's verbatim data can go. If the answers and details about, say, body systems are put in predefined sections on the history form under the heading 'Body systems', the information can be located in a matter of seconds. For example, information on coughing goes under 'Respiratory'; information on depression goes under 'Mind'. In later sessions when the practitioner wants to compare coughs or depressive symptoms the information is easy to find. Also, by following a format for history taking the practitioner can see the gaps in the history form. This then is a reminder to get the relevant information for those sections that have been missed. For example there may be a blank space on the history form under 'Circulation' and this will prompt the practitioner to complete this part of the history.

Thirdly, the art of patient interviews is to gauge when to gently direct or turn the patient's conversation towards information that the practitioner wishes to gain. If the practitioner is too directive the patient will learn only to briefly answer in a perfunctory way and to wait for the next question. This static style is quite mechanical and only emphasises to the patient that the practitioner's questions are more important than the patient's needs. This could stifle much rich information about the patient's personal thoughts, symptoms and motivations that can be discovered by a spontaneous, free-flowing conversation. On the other hand, if the practitioner is too non-directive the patient may digress into sessions of repetitive minutiae on one symptom; or random generalisations that do not articulate context or specificity; or the conversation is extended into blander areas to avoid enquiry into sensitive issues.

Complex cases: an example of how to summarise complex data



Case Study

'John' is an 84-year-old male. He is a very friendly and cheerful fellow of slim build and, considering the range of health issues he has, he is mobile and independent and pursues hobbies in music and literature. He has health issues with diabetes, asthma, insomnia, stress, headaches, elevated cholesterol, palpitations, skin rash, sciatica, sinusitis, depression, reflux and diarrhoea. Other issues can come and go, and these are recorded in a similar fashion, as in the box below, by adding more bottom rows. All symptoms are chronic, some are constant, some fluctuate and some are intermittent.

Table 1.2 Case history summary table

SYMPTOMS	FEBRUARY	MARCH	APRIL
Diabetes	Stable (6–7 on rising)	Same	
Asthma	Stable (same)	Same	
Insomnia	> 8/10; herbs good	> 9/10	
Stress	> 8/10; herbs good	Same	
Headache	> 4/10; occurs 2/7–mild	> 8/10	
Cholesterol	No data this month	Total 5.8; LDL 2.6; Tryg 2.6	
Palpitation	> 8/10 for magnesium	Same	
Skin rash	> 4/10—shrunk 1 cm	< 2/10; increased 2 cm; hot weather	
Sinusitis	> generally; but worse in last 2 days	Clear	
Depression	> 8/10 with herbs	All good	
Reflux	Same—still occurs after meals	Same	
Diarrhoea	Variable—no incontinence this month	Same	

Note: > means 'better'. Improvement or deterioration is given a score out of 10. For example > 8/10 means that symptoms have improved and are now 80% of normal.

After taking a couple of sessions to get full details of his complete case history the practitioner's subsequent sessions now involve tracking and reviewing his symptoms and response to treatment. This can be done on a simple spreadsheet by asking specific questions in each category and recording it in a summary table (such as Table 1.2). Every month the practitioner checks these symptoms and adds or subtracts other symptoms that come and go.

This simple method keeps track of the patient's 12 or more symptoms and pathologies. Within each session the treatment program can be reviewed and adjusted to address the patient's changing circumstances. If clarification or comparison of the past history of the patient's symptoms is required it can be readily accessed in the written history form in good detail. Discussion can then be directed to what symptoms bother the patient the most and to jointly decide whether or not to treat particular symptoms, given that the patient is already on multiple medications. Thus the patient's wishes and values are respected and the patient feels secure in the knowledge that all his issues are being addressed in a holistic way.

Further reading

The following texts provide more specific strategies to enhance communication skills and counselling skills to add to your consulting skills as outlined in this chapter.

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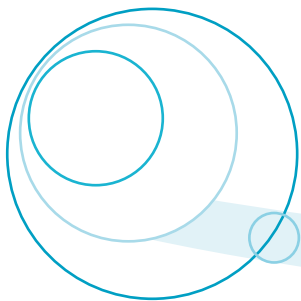
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Clinical depression

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CLASSIFICATION, EPIDEMIOLOGY AND AETIOLOGY

Depression is associated with normal emotions of sadness and loss, and can be seen as part of the natural adaptive response to life's stressors. True 'clinical depression', however, is a disproportionate ongoing state of sadness, or absence of pleasure, that persists after the exogenous stressors have abated. Clinical depression is commonly characterised by either a low mood, or a loss of pleasure, in combination with changes in, for example, appetite, sleep and energy, and is often accompanied by feelings of guilt or worthlessness or suicidal thoughts.¹ The *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV) classifies 'Major Depressive Disorder' (MDD) as a clinical depressive episode that lasts longer than 2 weeks, and is uncomplicated by recent grief, substance abuse or a medical condition.² Depression presents a significant socioeconomic burden, with the condition being projected by the year 2020 to effect the second greatest increase in morbidity after cardiovascular disease.³ The lifetime prevalence of depressive disorders varies depending on the country, age, sex and socioeconomic group, and approximates about one in six people.^{4,5} The 12-month prevalence of MDD is approximately 5–8%, with women approximately twice as likely as men to experience an episode.^{4,5}

The pathophysiology of MDD is complex, and to date no unified theory explaining the biological cause exists.¹ The main premise concerning the biopathophysiology of MDD centres on monoamine impairment, involving:^{6–10}

- dysfunction in monoamine expression and receptor activity, or a lowering of monoamine production
- secondary messenger system malfunction, for example G proteins or cyclic AMP
- neuroendocrinological abnormality concerning hyperactivity of the hypothalamic–pituitary–adrenal axis (HPA axis), which increases serum cortisol and thereby subsequently reduces brain-derived neurotrophic factor (BDNF) and neurogenesis
- impaired endogenous opioid function
- changes in GABAergic and/or glutamatergic transmission, and cytokine or steroidal alterations
- abnormal circadian rhythm.

From a holistic perspective, the biological causes of depression are unique to the individual, and can be viewed biochemically as varying impairment of monoamine



THE FOUR HUMORS

A traditional view of depression terms the condition ‘melancholia’. This is based on the humoral model, which depicts four ‘humors’ (choleric, sanguine, phlegmatic and melancholic).¹⁷

Depression falls under the auspices of the melancholic humor, being embodied as ‘black bile’.

The liver from an energetic perspective in traditional Western folkloric medicine and from traditional Chinese medicine is considered to be the organ primarily involved with depression, and is seen to regulate emotions.^{17,18}

Western medicine views the liver purely from a biomedical perspective, and research has not yet been conducted to examine any correlation between liver function/health and depression.

activity, homocysteine, cortisol and BDNF, and inflammatory interactions. Psychologically, cognitive and behavioural causes (or manifestations) of MDD are also commonly present in variations of negative or erroneous thought patterns, or schemas, impaired self-mastery, challenged social roles, and depressogenic behaviours or lifestyle choices.^{11–13}

Several biological and psychological models theorising the causes of depression have been proposed (reviewed below). The predominant biological model of depression in the last 60 years is the monoamine hypothesis.¹⁴ Other key biological theories involve the homocysteine hypothesis,¹⁵ and the inflammatory cytokine depression theory.⁸ A prominent psychological model is the stress-diathesis model, which promulgates the theory that a combination of vulnerabilities (genetic, parenting, health status and cognitions) are exploited by a life stressor, for example relationship break-up, job loss and family death.^{13,16} These stressful events may trigger a depressive disorder. Some scholars have advanced the theory of a biopsychosocial model, which aims to understand depression in terms of a dynamic interrelation between the biological, psychological and social causes (discussed later).¹²

RISK FACTORS

Various factors that increase the risk of MDD exist, and such an episode may in turn cause certain health disorders/issues. Genetic vulnerability may play an important part in the development of MDD. Genetic studies have revealed that polymorphisms relevant to monoaminergic neurotransmission exist in some people who experience MDD.¹⁹ Recent hypotheses suggest that genes related to neuroprotective/toxic/trophic processes, and to the overactivation of the hypothalamic–pituitary axis may be involved in the pathogenesis of MDD.¹⁹ Early life events or proximal stressful events increase the risk of an episode.²⁰ Twin studies provide evidence of the effect of environmental stressors on depression and many studies have revealed that a range of stressful events are involved, affecting remission and relapse of the disorder. Recurrence of depressive episodes and early age at onset present with the greatest familial risk.²¹ Current evidence suggests that the primary risk factors involved in MDD are a complex interplay of genetics and exposure to depressogenic life events.



DEPRESSION: AT-RISK GROUPS^{4,5,22}

- Females
- Younger people
- Previously married or unmarried people (especially for men)
- Unemployed or under financial pressure
- People with disabilities
- Possibly those living in large urban areas
- Major health conditions (especially cardiovascular disease)
- Obesity/metabolic disorders
- Chronic insomnia
- Alcohol/drug abuse or dependency

A consistent theme revealed by epidemiological data is that females have higher rates of MDD than men, approximating two times higher in some community samples.⁴ This is associated with a higher risk of first onset, and not due to differential persistence or recurrence. It appears that hormonal factors are not responsible (for example, oestrogen levels, pregnancy or the use of oral contraceptives). Biological vulnerabilities and environmental psychosocial factors appear to be responsible for the increased incidence of depression among women. Initial psychosocial triggers may occur in early teen years upon the onset of puberty, whereby gender difference markedly presents. As Kessler states,²³ it is conceivable that MDD presents more commonly in females due to social and psychological influences, such as sex-role differences and an intrinsic propensity to ruminate. Another methodological possibility is that men's depression may present with irritability rather than anhedonia, and as depression scales place less weight on irritability this may skew the results.

Practitioners should be aware of the existence of conditions that commonly co-occur with MDD. People who are clinically depressed have a far greater risk of having co-occurring generalised anxiety, sleep disorders and substance abuse or dependency.²³ It should be noted that these conditions may cause MDD and may also result from MDD. Depression is also often misdiagnosed as 'unipolar' when in fact it is the presentation of the depressive phase of 'bipolar' depression.²⁴ Appropriate screening needs to occur in patients presenting with depression. Initial questioning should assess the length and frequency of previous and current episodes, the severity, what triggers an episode, and whether they think about death regularly or have felt so low lately that they have considered suicide. Assessment should also include a drug and alcohol screen in addition to reviewing their sleep pattern and level of anxiety and stress. To assess any bipolarity of the depression, it is important to determine whether they have ever experienced several days or more of feeling very happy or 'high' in addition to behavioural changes such as a decreased need for sleep, rapidity of cognition or ideas, and any increases in planning, spending money or sexual drive (the bipolar spectrum discussed further below).²⁴ Appropriate referral in the case of suspected alcohol/substance abuse or dependency or bipolar disorder is recommended, as complementary or alternative medicine (CAM) currently lacks evidence as a primary intervention in these areas (although CAM may be adjuvantly beneficial).



SUICIDE

- Screen for presence of a clearly articulated plan to suicide, any preparations being made, and any past serious attempts.
- If patient is suicidal, refer immediately to an emergency department of a hospital for psychiatric assessment.
- Extreme caution should be observed for patients who in light of a recent suicidal disposition suddenly appear happy with no clear reason (they may be at peace with their decision to suicide).
- Initial antidepressant use may increase risk of suicide. Be especially aware of antidepressant use in adolescents.

CONVENTIONAL TREATMENT

Current medical treatment strategies for MDD primarily involves synthetic antidepressants (for example, tricyclics, monoamine oxidase inhibitors or selective serotonin reuptake inhibitors), and psychological interventions (for example, cognitive behavioural therapy (CBT), interpersonal therapy (IPT) and behavioural therapy (BT)).^{1,25} Medical treatment guidelines usually involve options such as providing counselling, CBT or IPT for mild depression, antidepressants and/or CBT for moderate depression, and antidepressants and ECT (and possibly hospitalisation) for severe depression.^{26,27} As only 30–40% of people achieve a satisfactory response to first-line antidepressant prescription, and approximately 40% do not achieve remission after several antidepressant prescriptions, further pharmacotherapeutic developments are currently being pursued.^{14,28} Future novel antidepressant mechanisms of action may involve modulating cytokines, secondary messengers, and glucocorticoid, opioid, dopaminergic or melatoninergic pathways.⁹

KEY TREATMENT PROTOCOLS

From a clinical perspective, the goal of treating MDD is to ameliorate the depression as safely and quickly as possible. Suicide is a great concern, and is a devastating potential consequence of MDD. If suicidal ideation is significant, or if self-harm is a distinct possibility at any stage, referral to a medical practitioner or to an emergency ward of hospital for immediate psychiatric assessment is crucial. The socioeconomic cost of untreated MDD is massive, and treated depression reduces the burden on health-care systems.²⁹ Evidence advocates early intervention to effectively treat MDD, to enhance remission, and thereby subsequently decrease human suffering and socioeconomic burden.²⁹

Although medical research has not currently advanced to the state of tailoring pharmacotherapy prescriptions to individual neurochemical or genetic profiles, ‘whole-system’ naturopathic diagnosis and treatment has an advantage in being able to prescribe in an individualised manner. First, in order to treat depression effectively, it helps to understand the psychological and biological factors that are

NATUROPATHIC TREATMENT AIMS

- Reduce depression and improve mood.
- Improve energy level.
- Promote positive balanced cognition.
- Encourage beneficial lifestyle changes.
- Educate about depressogenic factors and create a plan to combat them.

involved. Causes of depression are multifaceted, and individual presentations vary markedly. Because of this, tailoring the prescription for the individual may assist in compliance and recovery. Causative factors can be classified into pre-existing ‘vulnerabilities’ to depression, which may be ‘triggered’ by a stressor (commonly a series of stressors or one key event), then ‘maintaining’ factors may exacerbate or prolong the episode.

Several herbal medicines are particularly adept at affecting neuroreceptor binding and activity to achieve an antidepressant effect. Herbal medicines used to treat mental health disorders usually have central nervous system or endocrine-modulating activity.⁶ Common actions can involve monoamine activity modulation, stimulation or sedation of central nervous system activity, and regulation or support of healthy hypothalamic pituitary adrenal axis function (see Table 12.1).³⁰

Biopsychosocial model of depression

The most suitable model consistent with the holistic paradigm is a biopsychosocial model.¹² The essence of the model is that the cause of depression is multifactorial, with many interrelated influences involved in its growth. Genetics and biochemistry (biological), cognitions and personality traits (psychological), environmental factors (environmental) and social interactions (sociological) all affect the level of a person’s ‘vulnerability’ to a depressive disorder, which is commonly triggered by chronic or acute stressors. Protective factors are considered to be good genetics, balanced positive cognitions, healthy interpersonal relations and social support, and spirituality.^{11,31}

A balanced and integrative naturopathic treatment plan needs to address all aspects concerning the biopsychosocial model. Herbal, nutraceutical and dietary prescription can modulate the biological component of depression; psychological therapies and counselling support is advised to reconfigure negative cognitions, resolve underlying issues, and build resilience; and social concerns (for example, healthy work, lifestyle, exercise, rest balance, and sufficient family/friend/community interaction) should also be addressed. Depression may provide a context for developing meaning from the experience, thereby promoting spiritual growth. Displayed below is a model developed

Table 12.1 Nervous system herbal medicine actions³⁰

TRADITIONAL ACTION	PROPOSED MECHANISMS	APPLICATIONS
Nervines (tonics, stimulants)	HPA-modulation, beta-adrenergic activity	Depression, fatigue, convalescence
Adaptogens, thymoleptics, antidepressants, tonics	Monoamine interactions HPA-modulation	Depression, fatigue, convalescence
Anxiolytics, hypnotics, sedatives	GABA or adenosine-receptor binding or modulation	Anxiety disorders, insomnia
Antispasmodics, analgesics	Calcium/sodium channel modulation Substance P or enkephalin effects	Muscular tension (dysmenorrhoea, irritable bowel syndrome, headaches), visceral spasm, pain
Cognitive enhancers	Cholinergic activity Acetylcholine esterase inhibition	Cognitive decline, dementia

by the author for treating depression: the ALPS model (see Figure 12.1). This treatment model is based on the biopsychosocial model, outlining specific strategies for treating depression holistically. The model advocates a combined approach of antidepressant agents (natural or synthetic); lifestyle adjustments such as dietary improvement, and reduction of alcohol and caffeine, and increased relaxation and exercise; psychological interventions; and improved social functioning and integration.

Monoamine hypothesis

The monoamine hypothesis concerns the theory that depression is primarily caused by dysregulation of serotonin, dopamine and noradrenaline pathways (receptor activity and density, neurotransmitter production and neurochemical transport and transmission).⁹ Herbal and nutritional/dietary modulation may be helpful in modulating monoaminergic transmission. To date, the phytotherapy with the most evidence of monoamine modulation is *Hypericum perforatum*. Enough human clinical trials have been conducted for several meta-analyses to be conducted (see Table 12.2). All meta-analyses have revealed that *H. perforatum* provides a significant antidepressant effect compared to placebo, and an equivalent efficacy compared to synthetic antidepressants. *H. perforatum* has demonstrated several beneficial effects on modulating monoamine transmission. Although initial in vitro experiments suggested monoamine oxidase-inhibition by *H. perforatum*, further conducted experiments have not confirmed this activity.³² In vivo and in vitro studies have, however, revealed non-selective inhibition of the neuronal reuptake of serotonin, dopamine and norepinephrine.³³ This activity is likely to occur in part via modulation of neurotransmitter transport systems (for example, via Na⁺ gradient membranes). Increased dopaminergic activity in the prefrontal cortex has been documented.³⁴ A decreased degradation of neurochemicals and a sensitisation of and increased binding to various receptors (for example, GABA, glutamate and adenosine) have also been observed.^{35–37} It should be noted that some of the pharmacodynamic studies used intraponeal rather than oral administration; caution in extrapolating to humans is advised.

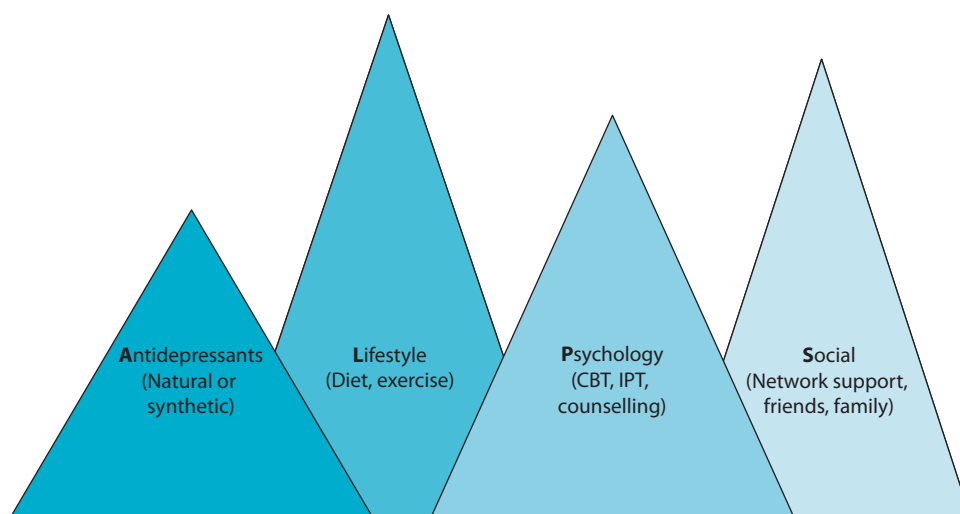


Figure 12.1 The ALPS model

Aside from *H. perforatum*, *Rhodiola rosea* and *Crocus sativus* currently possess the most evidence as monoamine and neuroendocrine modulators, and have provided preliminary human clinical evidence of efficacy in treating MDD.^{38,39} *R. rosea* is a stimulating adaptogen, which possesses antidepressant, anti-fatigue and tonic activity.^{39,40} A 6-week, phase III, three-arm randomised controlled trial (RCT) involving 91 subjects comparing *R. rosea* SHR-5 standardised extract (680 mg and 340 mg/day) with placebo demonstrated significant dose-dependent improvement on depression.⁴¹ It should be noted that the effect size was small, with a low response in comparison to a very low placebo response (usually there is a 20–50% reduction of depression in a placebo group); further studies need to be conducted to confirm efficacy. The phytochemicals salidroside, rosarin, rosin and tyrosol are considered to be the active constituents.⁴² In animal models, *R. rosea* has been documented to increase noradrenaline, dopamine and serotonin in the brainstem and hypothalamus, and to increase the blood–brain permeability to neurotransmitter precursors.⁴³ *Crocus sativus* is developing clinical evidence as an effective antidepressant (reviewed later). Crocin and safranal are currently regarded as the constituents responsible for *C. sativus*'s antidepressant action.³⁸ The mechanisms responsible for the antidepressant actions are purported to be mediated via reuptake inhibition of dopamine, norepinephrine and serotonin, and NMDA receptor antagonism.³⁸ Safranal is posited to exert selective GABA- α agonism, and possible opioid receptor modulation, as demonstrated via intracerebroventricular administration in an animal model.⁴⁴

Other herbal medicines that have been documented to exert monoamine modulation include *Bacopa monnieri*, *Ginkgo biloba*, *Panax ginseng* and *Convolvulus pluricaulis*; however, to date insufficient clinical trials have confirmed antidepressant effects in humans.^{45,46}

HPA-axis modulation

In the last two decades, cortisol has achieved increased attention in the study of the pathogenesis of depression. Substantial evidence exists for the role of cortisol and the HPA axis in depression.⁴⁷ Postmortem studies and cerebral spinal fluid sampling have found that corticotrophin-releasing hormone (CRF) can be elevated in samples from depressed patients.⁴⁸ A combination of vulnerability factors (genetic, age and early life events) and precipitating factors (psychological, physiological stressors, substance misuse and comorbid disease) may provoke an increase in CRF. This stimulates the secretion of adrenocorticotropin hormone (ACTH), and subsequent cortisol release from the adrenal glands (see Section 5 on the endocrine system). In vitro and animal models have demonstrated that HPA-axis dysfunction and increased cortisol attenuate the production of BDNF in the brain.⁹ BDNF is an important growth factor that nourishes nerve cells, and lower BDNF is correlated with depressive states.^{1,19} Synthetic antidepressants and electroconvulsive therapy appear to regulate the HPA axis and increase the production of BDNF.⁴⁷ In animal models, hypericin and the flavonoid derivatives have demonstrated to down-regulate plasma ACTH and corticosterone levels.³¹ In particular, an animal model demonstrated that 8 weeks of *H. perforatum* or hypericin administration decreased the expression of genes involved in the regulation of the HPA axis, and significantly decreased levels of CRH mRNA by 16–22% in the hypothalamic paraventricular nucleus (PVN) and serotonin 5-HT(1A) receptor mRNA by 11–17% in the hippocampus. Human studies have, however, found that *H. perforatum* increases salivary and serum cortisol levels.^{49,50} Importantly, while in vivo studies have shown that synthetic antidepressants can increase BDNF, *H. perforatum* does not prevent a decrease

in stress-reduced BDNF.⁵¹ It should be noted that while evidence does suggest that HPA modulation does occur with *H. perforatum* administration, the complex pharmacodynamics of the effect has not been fully elucidated to date, with variables such as differing human or animal models, stress study methodology and types of *H. perforatum* extracts obfuscating the conclusion.

Herbal adaptogens and tonics may play a beneficial role in modulating ACTH (refer further to Section 5 on the endocrine system). Stimulating adaptogens such as *Eleutherococcus senticosus*, *Schisandra chinensis* and *Rhodiola rosea* have demonstrated significant adaptogenic effects, posited as occurring from HPTA modulation.⁴² Although *E. senticosus*, *S. chinensis* and other adaptogens such as *Panax ginseng* and *Withania somnifera* have not demonstrated specific antidepressant activity, they may provide a supportive role in depressive presentations with HPA-axis dysregulation.

Homocysteine hypothesis

The homocysteine hypothesis centres on the theory that genetic and environmental factors elevate levels of homocysteine, which in turn provokes changes in neuronal architecture and neurotransmission, resulting in depression.^{15,52} The sulfur compound homocysteine (formed from methionine) has been demonstrated to be directly toxic to neurons, and can induce DNA strand breakage. Higher serum levels of homocysteine have been noted in depressive populations compared to healthy controls.⁵² Metabolism of homocysteine to **S-adenosyl methionine (SAME)** or back to methionine requires folate, B6 and B12. Folate is involved with the methylation pathways in the 'one-carbon' cycle, and is responsible for the metabolism and synthesis of various monoamines.⁵² Folate is also most notably involved with the synthesis of SAME, an endogenous antidepressant formed from homocysteine. Folate deficiency is implicated in causing increased homocysteine levels, and has been consistently demonstrated in depressive populations and in poor responders to antidepressants.^{53,54} Folate deficiency has been reported in approximately one-third of people suffering from depressive disorders.⁵⁴ Finally, a correlation has been discovered between methylenetetrahydrofolate reductase (a folate-metabolising enzyme) polymorphisms and depression, indicating a genetic link.⁵⁵

Several studies exist assessing the antidepressant effect of **folic acid** in humans with concomitant antidepressant use.^{1,56,57} All of these studies yielded positive results with regard to enhancing antidepressant response rates or increasing the onset of response. An example of folic acid's antidepressant activity is reflected in a controlled study using 500 µg of folic acid or placebo adjuvantly with 20 mg fluoxetine in 127 subjects with a Hamilton Depression Rating Scale (HDRS) of ≥ 20 .^{57,58} The study demonstrated a statistically significant reduction after 10 weeks on the HDRS for women. This effect was not, however, replicated in the male sample. Along with a good dietary intake of folate-rich leafy vegetables or folic acid supplementation, a multivitamin high in B vitamins (especially B6 and B12) may assist in reducing homocysteine, and maintaining adequate levels of SAME. This will also assist in maintenance of energy production, adrenal function and the creation of neurotransmitters.

Inflammatory factors causing depression

A cytokine-mediated pro-inflammatory event has been considered as a factor involved with the pathophysiology of MDD.⁸ Studies have demonstrated that otherwise healthy patients with depression have presented with activated inflammatory pathways.⁵⁹ It has been posited that pro-inflammatory cytokines produced from inflammation may

influence neuroendocrine function via entry through the 'leaky regions' of the brain (for example, the circumventricular organs), and subsequent modulation of cytokine specific transport molecules, or cytokine stimulation of vagal afferent fibres.⁸ Modulation of both CRT and neurotransmitters is known to be effected by cytokines. The main pro-inflammatory cytokines implicated in depressogenesis centres on IFN- α producing IL-1 β , IL-6 and TNF- α cytokines (see Chapter 28 on autoimmunity). In laboratory studies, animals exposed to a variety of stressors have demonstrated an increase in these pro-inflammatory cytokines. Synthetic antidepressants have been shown to inhibit the production of various inflammatory cytokines, and to stimulate the production of anti-inflammatory cytokines.⁸ Although in its infancy, nascent research is evolving towards developing synthetic medicines that modulate cytokines with a regard to ameliorating depression.⁹

Attenuation of pro-inflammatory cytokines may be of benefit in individuals who present with either a preceding or comorbid inflammatory condition, or a chronic latent infection. Appropriate screening to determine any infections, or inflammatory process, with reference to the chronology of the onset of depression is advised. If an association is plausible, herbal medicines and nutrients that dampen the inflammatory cascade and attenuate the production of pro-inflammatory cytokines may be advised (see Section 2 on the respiratory system and and Section 1 on the gastrointestinal system). In brief, herbal and nutritional medicines that may potentially benefit the treatment of pro-inflammatory evoked MDD include *Albizzia* spp., *Echinacea* spp., **vitamin C** and **bioflavonoids**, and **zinc**. *Albizzia* spp. (in particular *A. lebbek*) have been documented to exert anti-inflammatory and antiallergic activity.⁶⁰ In addition to this activity, anxiolytic and antidepressant effects have been demonstrated in animal models, and in the case of *Albizzia julibrissan*, the plant curiously is known as 'happy bark' in traditional Chinese medicine.^{61–63}

Aside from the previously mentioned herbal and nutritional medicines, **omega-3 fatty acids** also have a role in reducing inflammation-based MDD.⁵⁹ Epidemiological studies have demonstrated that a rise in depressive symptoms may be correlated with lower dietary omega-3 fish oil (eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA)).^{64–67} Studies have also demonstrated that people with depression have a tendency towards a higher ratio of serum arachidonic acid to essential fatty acids, and an overall lower serum level of omega-3 compared to healthy controls.^{59,68–70} Urbanised Western cultures tend to have a far higher ratio of dietary omega-6 oils compared to omega-3 oils, and this has been regarded as a possible factor in the rise of depression over the last several decades.^{64,67} The pathophysiology occurring from a pro-omega-6 diet may involve an increased promotion of inflammatory eicosanoids, a lessening of BDNF and a decrease in neuronal cell membrane fluidity and communication.^{67,71} Evidence currently suggests that omega-3 fatty acids exert antidepressant activity via beneficial effects on neurotransmission.⁷² This may occur via modulation of neurotransmitter (norepinephrine, dopamine and serotonin) reuptake, degradation, synthesis and receptor binding.^{73,74} Animal models have demonstrated that omega-3 fatty acids increase serotonin and dopamine concentrations in the frontal cortex, and that a diet deficient in the nutrient decreases catecholamine synthesis.^{73,75,76} A recent human clinical trial demonstrated a significant increase in plasma concentrations of norepinephrine in healthy humans.⁷⁴

Several human clinical trials have been conducted assessing the efficacy of EPA, DHA or a combination of both of these essential fatty acids.⁷⁷ Clinical evidence regarding the use of essential fatty acids as a monotherapy is equivocal, with a mixture of positive and negative trials (see Table 12.2 at the end of the chapter for a review of the evidence).

ADDITIONAL THERAPEUTIC OPTIONS

S-adenosyl methionine (SAME)

- It is an endogenous compound produced from methionine and various methylators (e.g. B6, B12 and folate) in the body.⁸⁰
- It serves as a necessary methyl donor of methyl groups involved with the metabolism and synthesis of neurotransmitters.^{81,82}
- In vivo studies have consistently shown that SAME possesses antidepressant activity.² Many human clinical trials using SAME in MDD have been conducted, and all have revealed beneficial antidepressant effects, and comparable effects to synthetic antidepressants.^{83–88} Studies, however, are heterogeneous in terms of dosage, trial length and methodology.⁸⁰
- Most clinical studies involved parenteral or intramuscular injections of SAME, rather than oral preparations.⁸²
- Considering pharmacokinetic variability between administration techniques, oral preparations may not provide the same effect.
- SAME should be used with caution in patients with a history of (hypo)mania due to concerns over switching from unipolar depression to mania.
- SAME is expensive and the cost may be prohibitive for some people.

L-tryptophan

- It is an essential monoamine precursor required for the synthesis of serotonin.^{89,90} L-tryptophan has been studied extensively as an antidepressant.
- Although many positive studies exist, only one RCT of sufficient methodological rigour exists. An RCT involving 115 participants with depression comparing L-tryptophan to placebo, an L-tryptophan-amitriptyline combination or amitriptyline demonstrated that the amino acid was equally as effective to the antidepressants and superior to placebo.⁹¹
- Eight controlled adjunct studies using L-tryptophan with antidepressants provide encouraging evidence. Tryptophan augmentation was found to be effective in increasing the antidepressant response with phenazine sulfate,⁹² clomipramine,^{93,94} tranylcypromine⁹⁵ and fluoxetine.⁹⁶ However, other clinical studies using tricyclics discovered no additional benefit compared to placebo.^{97–100}
- Evening dosing of L-tryptophan (with relevant cofactors such as B6 and B12, folate and magnesium), taken with fructose and without protein, may have a role in treating depression, especially with co-occurring insomnia.
- Always take amino acids without food to avoid competitive absorption with other amino acids, and prescribe them with the relevant cofactors. Use caution in high dosage and with antidepressants (potential serotonin syndrome).

***Crocus sativus* (saffron)**

- Saffron is a Persian traditional plant medicine with reputed antidepressant activity.
- Clinical trials comparing the herbal medicine with synthetic agents, imipramine and fluoxetine have demonstrated equal efficacy.^{101–103}
- Extracts standardised to exert antidepressant action are usually standardised for at least 5% safranal. Crocin and safranal are currently regarded as the constituents responsible for the antidepressant activity.^{104–105}
- No definitive safety data currently exist. Traditional knowledge of adverse reactions includes nausea, vomiting and diarrhoea.³⁸ Clinical trials have detailed anxiety, tachycardia, nausea, dyspepsia and changes in appetite as possible side effects.^{104–105}

This may in part be due to many studies using olive oil as an ‘inert’ control, and some studies using higher DHA to EPA ratios or DHA alone.⁷⁸ Clinical trials using essential fatty acids adjuvantly with antidepressants have provided positive evidence of additional increased reduction of depression level.⁷⁹ Current evidence supports the use of essential fatty acids adjuvantly with antidepressants, in cases of deficiency or if comorbid cardiovascular or inflammatory disorders are present.

The mood spectrum versus categorical diagnosis

Naturopathic diagnosis of mood disorders reflects the holistic psychiatric medicine model, whereby individuals present with unique presentation of MDD, often oscillating between varying levels of depression and anxiety, and sometimes present with peaks of hypomania (for example, increased mental activity, socialisation, work and planning, and decreased sleep). An advantage of naturopathic practice is that prescriptions can be altered to flexibly accommodate the natural rhythm of mood disorders. While it is more applicable to treat the patient holistically (not just ‘the depression’), if the condition is viewed in terms of a discrete medical diagnosis, then specific treatment protocols and prescriptions can be instigated (see Figure 12.3).

- The concept of the ‘mood spectrum’, advocated by academics such as Akiskal, Angst, Cassano and Benazzi, promotes the theory that depressive presentations occur along a continuum, rather than existing as specific discrete diagnostic categories.^{106,107}
- Evidence supports the idea that unipolar depression and bipolar II depression occur across a spectrum, with 30% of MDD patients experiencing various bipolar symptoms (for example, agitation, racing thoughts and decreased sleep).¹⁰⁶
- Individual depressive subtype classifications (for example, melancholic, atypical and co-thymic) are diagnostically unstable, with studies showing that people with mood disorders commonly move between various depressive presentations.¹⁰⁷
- The effect of seasonal influence on MDD should also be considered. While seasonal affective disorder (SAD) is a specific type of depressive disorder, low light and cold weather may exacerbate non-SAD diagnosed depression.¹⁰⁸ Although evidence specifically supports light therapy only in treating SAD, exposure to morning sunlight is a commonsense recommendation. Sunlight intuitively lifts the mood, and causes increased serotonin turnover in the brain.¹⁰⁹

INTEGRATIVE MEDICAL CONSIDERATIONS

As detailed above, an integrative treatment plan should ideally be provided. Other treatments include acupuncture and psychological interventions. If the patient is unresponsive to CAM treatment (after 2–4 weeks of treatment), the prescription should be altered or additional interventions provided. Synthetic antidepressants may be required if the depressive episode worsens and suicidal ideation is present, or if symptoms persist after several prescription modifications to non-response.

Acupuncture and massage

The use of acupuncture to treat depressive disorders has been documented in traditional Chinese medicine (TCM) texts.¹¹⁰ In TCM the two main organs (energetically) involved in depression are the liver and the heart.¹⁸ Two primary patterns of depression are diagnosed in TCM: ‘Stagnation of Liver Qi’ (excess pattern) and ‘Deficiency of Qi, Blood, or Kidney Jing’ (deficient pattern).¹¹⁰ In principle, physical activity and exercise are regarded to ‘Move Qi and Blood’, thereby alleviating ‘Stagnation’, and to ‘Tonify Qi’

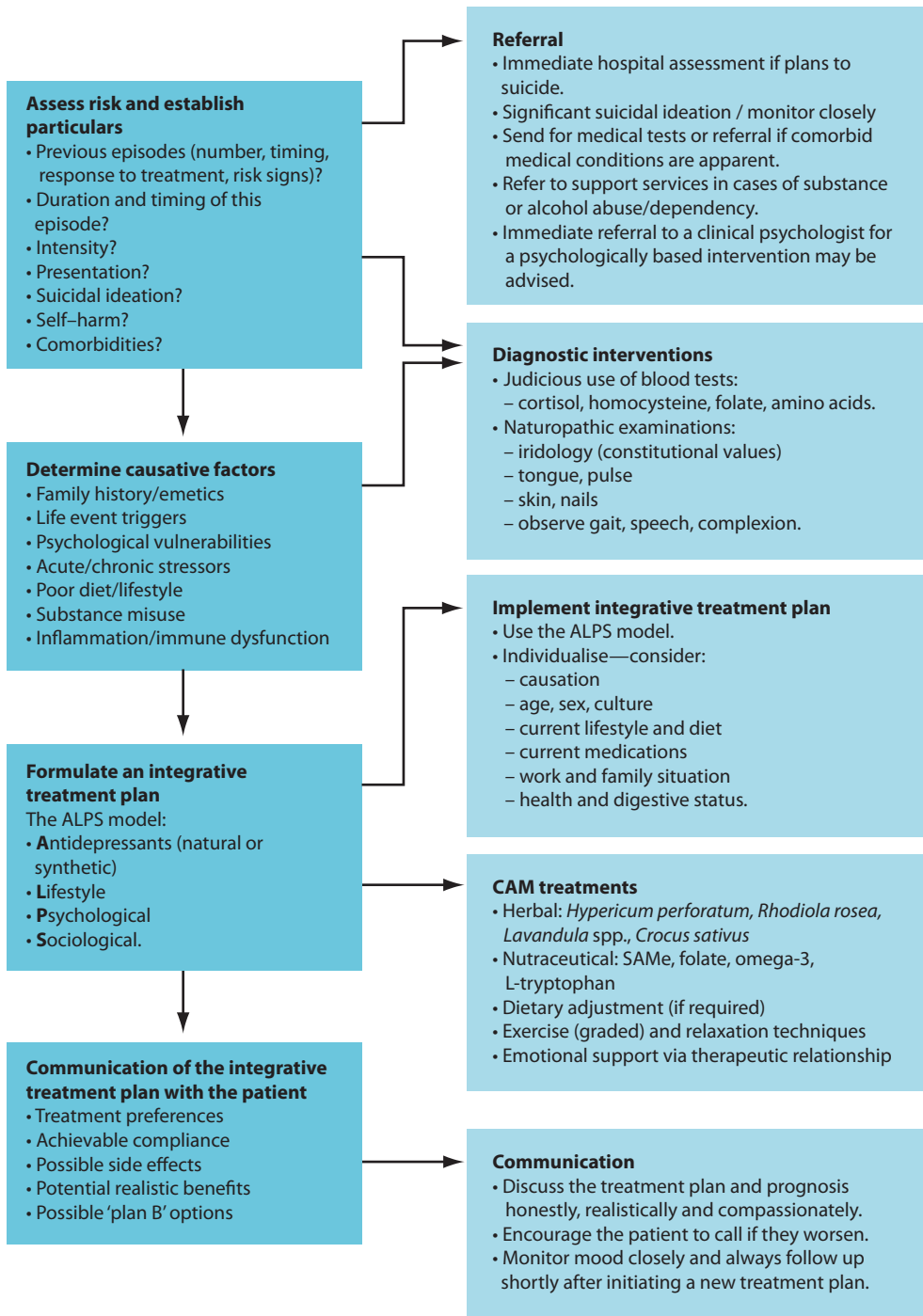


Figure 12.2 Naturopathic treatment decision tree—depression

(lung and spleen), thereby improving energy and vigour. A review of eight small-randomised controlled trials confirmed that acupuncture could significantly reduce the severity of depression on the HDRS or Beck Depression Scale.¹¹¹ However, no significant effect of active acupuncture was found on the response rate or remission rate. Another review¹¹² found a total of four RCTs meeting a minimum standard of methodological rigour (for example, a randomised sample and control groups used). Results of these studies revealed significant effects on reducing depression versus non-specific or sham acupuncture, and equivocal efficacy to tricyclic antidepressants. In one study, although acupuncture was equally effective to massage and sham acupuncture, only the true acupuncture provided sustained antidepressant effects. Acupuncture has been documented to interact with opioid pathways, and substances which modulate these pathways have been shown to have antidepressant activity.^{9,113,114} Other possible antidepressant mechanisms of action include the increased release of serotonin and norepinephrine, and CRT and cortisol modulation.¹¹³

Massage may also be of benefit in improving mood and reducing depression. Studies of varying methodological rigour have shown that massage increases relaxation, decreases stress and elevates the mood.¹¹⁵ A rigorous review of massage techniques in treating clinical depression commented that, while positive studies exist, a lack of evidence from RCTs does not support this intervention.¹¹⁶ While evidence currently does not support massage as a primary monotherapy in treating MDD, use of massage adjuvantly can be advised, especially in cases of co-occurring muscular tension.

Psychological intervention

As outlined under the ALPS model, psychological intervention is an important component in treating MDD. Guidelines support the use of psychological interventions such as cognitive behavioural therapy (CBT) and interpersonal therapy (IPT) in mild depression rather than synthetic medication.²⁷ CBT and IPT are accepted psychological interventions, both having equal evidence of efficacy in treating MDD.²⁵ CBT involves learning cognitive skills to 'reprogram' erroneous or negative thought patterns with positive balanced cognitions, and to institute positive behavioural modifications.¹¹⁷ The theory is based on the concept that a person's negative, critical, erroneous thought patterns provoke deleterious emotional and physiological responses. By intervening before this cascade occurs, and establishing a positive balanced inner dialogue, this spiral can be avoided. IPT focuses on identifying problematic social situations that are depressogenic, and developing interpersonal techniques (such as social skills) to manage interpersonal relationships.¹¹⁷ By increasing confidence and competency in managing social interactions, a robust self-esteem may develop.

Other techniques, such as teaching problem-solving skills to identify and deal with depressogenic triggers, may be of assistance. Finally, it is important to assist the patient to identify external triggers that may cause an episode (for example, the anniversary of a death, or a change in weather), and help them to formulate a 'pro-euthymic' plan to combat this. Naturopaths may learn basic skills in teaching CBT and IPT, and a caring humanistic approach should always be present. However, for skilled psychological intervention, referral to a clinical psychologist or highly trained counsellor is advised.

Adjuvant CAM treatments with antidepressants

If the patient is taking antidepressant medication, adjuvancy options are recommended (see Sarris et al.¹¹⁸ for a review). Adjuvant strategies with antidepressants

involve combining an additional thymoleptic intervention to directly increase the antidepressant effect, or use a supplementary therapy to enhance activity, or reduce side effects by a synergistic interaction. Such prescription should be discussed between the physician and naturopath, and be closely monitored. The evidence regarding combining synthetic antidepressants and herbal medicines is currently unknown. Potential exists in combining antidepressant herbal medicines to increase the therapeutic effect in absent or partial responders to synthetic antidepressants. Consideration of serotonin syndrome or switching to bipolar (hypo) mania should, however, be given. Co-administration of herbal medicines may also have a potential role in addressing individual presentations or comorbid features of

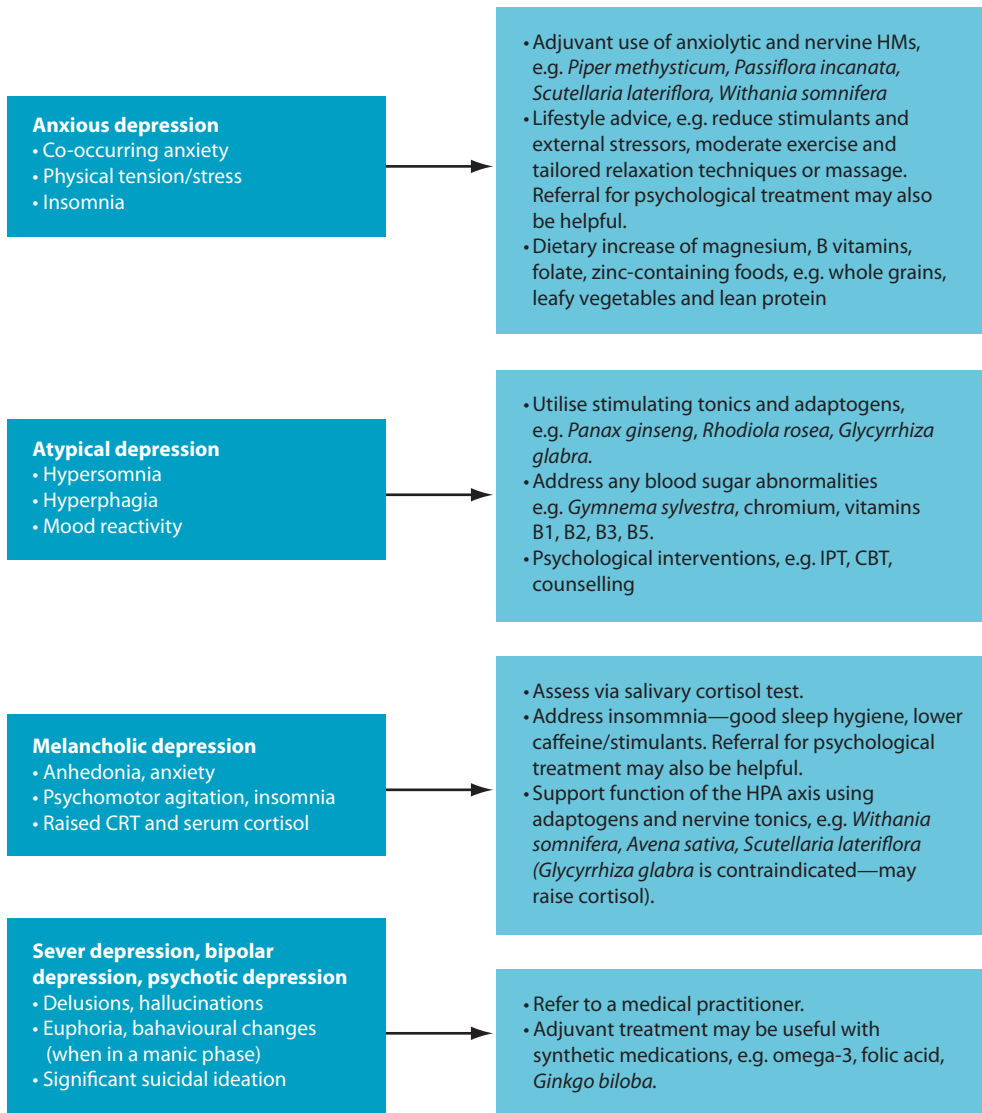


Figure 12.3 Psychiatric diagnostic depressive presentations and example treatment options^{2,100,130}

depression (see Figure 12.3), or to reduce side effects of antidepressants. Note the following:

- Strong evidence exists for combining **SAMe, L-tryptophan, folic acid or omega-3** with SSRIs or tricyclic antidepressants to increase response or speed the onset of action.⁷⁹
- Novel adjuvant prescription includes the use of aromatic or bitter herbs such as *Zingiber officinale* or *Cynara scolymus* to reduce nausea and relieve dyspepsia.^{119,120}
- Co-occurring fatigue could potentially be reduced via co-administration of adaptogens such as *Rhodiola rosea*³⁹ or *Panax ginseng*.¹²¹
- Insomnia and irritability could be treated via herbal anxiolytics such as *Passiflora incanata*¹²² or *Piper methysticum*.¹²³
- Sexual dysfunction may be alleviated in some patients by using *Ginkgo biloba*,^{124–126} although not all studies show positive results.¹²⁸
- The occurrence of hepatotoxicity could be potentially reduced by using antioxidant hepatics such as *Silybum marianum* or *Schisandra chinensis*.¹²⁹



Case Study

A 28-year-old female presents with persistent **low mood**. She says that for the last few months she **lacks motivation**, and has **lost pleasure** in activities that she usually enjoys. Her **energy is very low** and says she **just wants to sleep**. Her diet is poor, lacking in leafy vegetables and fish.

SUGGESTIVE SYMPTOMS

- Persistent low mood
- Loss of pleasure in work and hobbies
- Weight and appetite change
- Sleep disturbance, Insomnia
- Altered cognitions (guilt, low self-worth, suicidal ideation)
- Psychomotor agitation or slowness
- Fatigue

Example treatment

Herbal and nutritional prescription

In the above case, the primary prescriptive protocol is to provide an antidepressant action to treat the depression. The co-occurring manifestations of fatigue, amotivation and hypersomnia can be addressed via stimulating tonics and adaptogens. In the above case, a dysregulation of serotonin may be responsible for the low mood; norepinephrine dysregulation may affect amotivation, hypersomnia and fatigue; while dopamine dysregulation may be responsible for anhedonia. *Hypericum perforatum*, *Rhodiola rosea* and *Lavandula angustifolia* should aid in the elevation of her mood. *Panax ginseng*, *Rhodiola rosea* and *Glycyrrhiza glabra* will assist in enhancing adrenal activity and invigorating her energy and motivation.¹⁰¹ Omega-3 may be of benefit in treating her depression (especially if she is deficient in it), and a multivitamin high in folate will provide the nutrients involved in the manufacture and transmission of neuroreceptors, while assisting the methylation pathway.

Herbal formula

<i>Hypericum perforatum</i> 1:2	25 mL
<i>Rhodiola rosea</i> 2:1	25 mL
<i>Lavandula angustifolia</i> 1:2	20 mL
<i>Panax ginseng</i> 1:1	15 mL
<i>Glycyrrhiza glabra</i> 1:1	15 mL
7.5 mL morning and afternoon	100 mL
	100 mL

Nutritional prescription

Omega-3 fish oil
3 tablets (3 g) 2× day
Multivitamin 1 per day
(high in B vitamins and folic acid)

Dietary and lifestyle advice

Dietary programs designed to treat depression have to date not been rigorously evaluated. Although evidence supporting specific dietary advice is currently absent, a basic balanced diet (see Section 1 on the gastrointestinal system) including foods rich in a spectrum of nutrients can be recommended. Foods rich in folate, omega-3, tryptophan, B and C vitamins, zinc and magnesium are necessary for the production of neurotransmitters and neuronal communication.⁷⁷ These include whole grains, lean meat, deep-sea fish, green leafy vegetables, coloured berries and nuts (walnuts, almonds).^{65,130}

General lifestyle advice should focus on encouraging a balance between meaningful work, adequate rest and sleep, judicious exercise, positive social interaction and pleasurable hobbies. Behavioural therapy techniques have shown positive effects on reducing depression by training the person to reduce or better manage stressful situations, and to increase pleasurable activities that enhance self-esteem and self-mastery. If substance or alcohol dependence or misuse is apparent, supportive advice on curtailing this, or appropriate referral, should be communicated (see the case in Chapter 13 on chronic generalised anxiety for more detail).

Exercise or physical activity

Increasing physical activity is advised in cases of underactivity. Associations between greater physical activity and improved mood and wellbeing have been documented,¹³¹ and several RCTs support exercise as effective in managing MDD. A meta-analysis of 11 treatment-outcome studies of exercise on the treatment of depression showed a significant effect in favour of physical exercise compared with control conditions (routine care, wait list, meditation/relaxation or low-intensity exercise).¹³² A very large average effect size was obtained with all but two studies obtaining superior results from exercise than from control. However, many of these studies had methodological failings (for example, not using blind assessment or intention-to-treat analyses). Research strongly suggests that anabolic exercise of high intensity is more effective than low intensity.¹³³ The biological antidepressant effects of exercise include a beneficial modulation of the HPA axis, increased expression of 5-HT, and increased levels of circulating testosterone (which may have a protective effect against depression).¹³⁴ Evidence also exists for the use of yoga to reduce depression and improve mood. A review documented five RCTs using various types of yoga to treat MDD.¹³⁵ While the studies reviewed all concluded positive results, the methodologies were poorly reported and thereby no firm conclusion can be reached. It is worthwhile highlighting that certain types of yoga may actually have greater antidepressant effect. 'Mindfulness' in exercise techniques such as yoga may potentially have greater efficacy than low-intensity, low-focus yoga, although evidence does not currently confirm this theory.¹³⁶

Evidence for the type and amount of exercise for the management of MDD, currently favours anabolic over aerobic activity to gain the greatest benefits, and the intensity needs to be moderate to high and performed two or three times per week.¹³³ Caveats exist regarding exercise prescription for MDD. Depression may be worsened if the person is unable to meet expectations, potentially promoting a sense of failure and guilt. This may be more likely to occur in severe MDD, especially where psychomotor retardation, hypersomnia, somnolence, marked fatigue or anhedonia are present. Exercise plans should be instituted after a medical assessment, and initially commenced at a low intensity to allow for physical and psychological adaptation to occur to the new stimulus.

Table 12.2 Review of the major evidence

INTERVENTION	KEY LITERATURE	SUMMARY OF RESULTS	COMMENT
St John's wort (<i>Hypericum perforatum</i>)	Meta-analyses Linde et al. 2005 ¹³⁷ Roder et al. 2004 ¹³⁸ Werneke et al. 2004 ¹³⁹ Whiskey et al. 2001 ¹⁴⁰	Relative risk: SJW versus placebo on HDRS 1.71 (1.40–2.09) ¹³⁷ 1.52 (1.28–1.75) ¹³⁸ 1.73 (1.40–2.14) ¹³⁹ 1.98 (1.49–2.62) ¹⁴⁰ Relative risk: SJW vs. synthetics on HDRS 0.96 (0.85–1.08) ¹³⁸ 1.00 (0.90–1.11) ¹⁴⁰	SJW consistently demonstrates greater efficacy than placebo in treating MDD. Efficacy is equal to synthetic antidepressants. Lower hyperforin extracts are advised to minimise drug interactions.
Omega-3 fish oil	Meta-analyses and reviews Lin & Su 2007 ⁷⁷ Appleton et al. 2006 ⁶⁶	Two meta-analyses of nine and eight studies respectively revealed positive results (effect size $d = 0.61$; $d = 0.73$). Most positive studies included were 'adjuvant' trials. Several recent equivocal RCTs using monotherapy omega-3 exist. ⁷⁸	The balance of evidence suggests limited efficacy as a monotherapy for MDD. Recommend in deficient states, or in comorbid inflammatory conditions or CVD, or adjuvantly with antidepressants.
Folic acid	Monotherapy RCTs Currently no robust studies exist using folic acid in MDD. Several adjuvancy studies using antidepressants and folic acid exist (see Taylor et al. 2004 for a review). ⁵³	Antidepressant augmentation with folate may increase response rate increases and efficacy in treating MDD. Subjects with lower folate levels are more likely to have a delayed response by on average 1.5 weeks.	In cases of folate deficiency supplementation can be cautiously recommended with antidepressants to potentially ↑ response and efficacy. May be more efficacious in females than males. Caution should be observed in pernicious anaemia (addition of B12 required).
L-tryptophan	Systematic review and meta-analysis Shaw et al. 2002 ¹⁴¹ Positive augmentation studies by Coppen et al. 1963, ⁹⁵ Glassman & Platman 1969, ⁹² and Walinder et al. 1976. ⁹⁴	Tryptophan augmentation with MAOIs, SSRIs and some TCAs is effective in increasing the antidepressant response. No difference occurred compared to placebo with other tricyclics. High dosage may cause adverse reactions, e.g. GIT complaints, nausea or serotonin syndrome.	May be of use in subjects taking antidepressants, in tryptophan deficiency, or in depression caused by serotonergic pathway dysregulation.
S-adenosyl methionine (SAME)	Meta-analysis and reviews Several monotherapy RCTs, and adjuvant studies exist: Williams et al. 2005 ⁸² Papakostas et al. 2003 ⁸¹ Bottiglieri et al. 1994 ¹⁴²	Intramuscular and oral augmentation of SAME with antidepressants has demonstrated ↑ response and remission rates. May enhance response in antidepressant non-responders.	Parenteral administration may be more efficacious than oral administration. May interact with serotonergic antidepressants. Caution in bipolar patients to avoid switching to mania. Expense may be a caveat.

(Continued)

Table 12.2 Review of the major evidence (*Continued*)

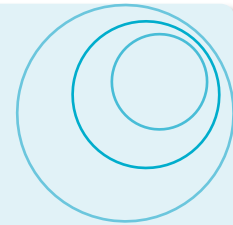
INTERVENTION	KEY LITERATURE	SUMMARY OF RESULTS	COMMENT
Physical Interventions (aerobic exercise, weights, yoga, massage)	Key studies or reviews See Sarris et al. 2008 for a review. ¹⁴³ Exercise: Lawlor Hopker 2001 ¹³² Running: Doyne et al. 1987 ¹⁴⁴ Weights: Dunn et al. 2001 ¹³³ Yoga: Pilkington et al. 2005 ¹³⁵ Massage: Coelho et al. 2008 ¹¹⁶	Aerobic exercise, weights and yoga more effective in reducing depression compared with no treatment or wait list control. Large effect size noted in Lawlor & Hopker 2001 ¹³² meta-analysis ($d = 1.42$, 95% CI: 0.92–1.93). Most studies support massage as a mood-improving intervention. Currently there is a lack of high quality evidence.	All modes of physical activity have antidepressant effects. Higher-intensity exercise and weights appear to have the greatest antidepressant effect.

Expected outcomes and follow-up protocols

In the above case, reduction of depression and a return towards euthymia is expected within a month of commencing treatment. A depressive episode will commonly remit within 6 months (even without treatment due to the natural rhythmicity of MDD), although maintaining factors and the number of previous episodes may affect complete remission. Many people will have their depression alleviated simply by taking the step to seek treatment, making lifestyle adjustments, and from the interpersonal therapeutic relationship with the practitioner. If the depressive episode persisted and suicidality was still absent, a change of prescription would be warranted. Additional interventions such as SAME or L-tryptophan augmentation may be helpful. If the condition worsened then medical referral would be advised. Depressive episodes are often diagnostically unstable, and thereby the patient should be monitored carefully to modulate the prescription according to any changes in symptoms. Changes that may occur include bipolar elements, anxiety, insomnia or changes in appetite, energy and cognition. After the depressive symptoms remit, treatment should be continued for 3–6 months to enhance the chance of remission.

KEY POINTS

- Depression is a condition that should be treated early and assertively.
- An integrated individualised treatment approach such as ALPS is recommended.
- Carefully monitor the prescription's effect and any change in suicidal ideation.
- If depression persists or worsens, refer appropriately.



Further reading

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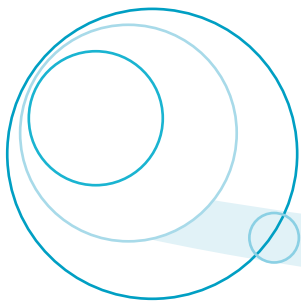
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Fertility, preconception care and pregnancy

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PRECONCEPTION CARE

There is solid scientific evidence that infant health is inextricably linked to the health of the women who bear them, especially regarding preconception care.¹ Preconception care takes place prior to conception and focuses on the reduction of conception-related risk factors and increasing healthy behaviours. It can be said that preconception care epitomises the naturopathic principle to address the cause, not just the symptom, of illness. By ensuring health issues are addressed in both partners prior to conception, the aim is to improve the health of the infant at birth in a way that even early prenatal care can not.² Ideally, preconception care involves both partners as some risk factors affect both males and females. Furthermore, involving both partners may help promote equal involvement in the preparation for a major life transition. As with all naturopathic treatments, preconception care incorporates a holistic approach and, as such, supports the physical and psychological health of both partners.

The nature of a preconception care plan will differ between couples. For ease of understanding, preconception care can be categorised into two broad categories: health promotion and disease attenuation. Health promotion preconception care describes couples who have not yet attempted conception and have no diagnosed illnesses, but would like to ensure optimum health before their baby is conceived. Disease attenuation preconception care, in contrast, applies to couples with current diagnosed health conditions, or who have already had unsuccessful attempts to conceive. There may be some crossover between these two categories and, once disease attenuation has been addressed, it is quite common to incorporate health promotion into the plan prior to

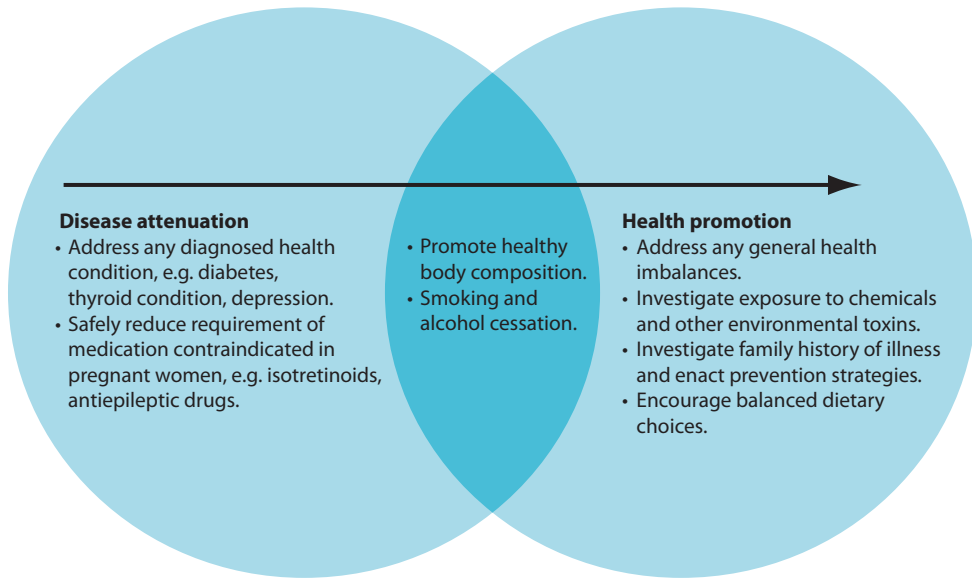


Figure 31.1 Approaches to preconception care

conception (see Figure 31.1). However, these are general guides only and the approach to the treatment plan should always be patient-centred, with the time and level of intervention required for each category determined based on couples' needs. As such, it is important to remind couples that, although many achieve conception soon after they commence attempting, for others patience is required.

Infertility and subfertility

Impaired fertility affects approximately one in six couples.³ In young, healthy couples, the probability of conception in one reproductive cycle is typically 20 to 25%, and in 1 year it is approximately 90%; however, this success rate can decline rapidly due to various age-related or health factors.³

Reproductive specialists use strict definitions of infertility.⁴ Clinical infertility in a couple is defined as the inability to become pregnant after 12 months of unprotected intercourse. However, consensus is building that the diagnosis of clinical infertility should also be considered after six cycles of unprotected sex in women over 35 years of age.⁵ Clinical infertility may also be considered when the female is incapable of carrying a pregnancy to full term. At this time further investigation becomes warranted to establish whether there are physical conditions hindering conception and, if so, what intervention may be appropriate. Infertility is not necessarily analogous to subfertility, which is often caused by other underlying conditions such as endometriosis or polycystic ovarian syndrome.

Causes of infertility and subfertility

Infertility can be considered to be primary or secondary. Couples with primary infertility have never been able to conceive, while secondary infertility is defined as difficulty conceiving after already having conceived (and either carried the pregnancy to term or had a miscarriage).⁴ Secondary infertility is not considered as a diagnosis if there has been a change of partners.⁴

Table 31.1 Common causes of infertility in males and females

MALE	FEMALE
Low sperm count	Non-specific immune factors
Low percentage of progressively motile sperm	Irregular ovulation (e.g. polycystic ovarian syndrome)
Disorders of sperm morphology	Steroid hormone imbalance (may be influenced by insulin, thyroid function, stress, adiposity or exposure to hormone disrupting compounds)
High degree of abnormality on sperm	Hostile endometrial environment (may be influenced by hormonal imbalance, structural abnormalities, fibroids, infection or immunological factors)
Chromosome fragmentation	Genetic variations (such as MTHFR polymorphism)

Source: Adapted from Speroff and Fritz 2005⁴

Infertility may also be more broadly grouped into categories of sterility or relative infertility. Sterility can arise from various predominantly non-treatable underlying disorders involving lack of eggs (menopause, radiation damage or some autoimmune diseases); lack of sperm (infectious causes or immature sperm); fallopian tube obstruction (endometriosis, surgical or due to infection such as chlamydia) or hysterectomy. In contrast, infertility may be caused by other factors (see Table 31.1). Male causes of infertility include defective sperm production and/or insemination difficulties.⁶ Female causes include ovulation factors (anovulation or infrequent ovulation), tubal damage, uterine factors such as adhesions, and cervical mucus ‘hostility’ (commonly due to an immunological defect).⁶

CONVENTIONAL TREATMENT

The conventional approach to preconception care does not differ greatly from the naturopathic approach. The focus is on increasing the general level of health and ceasing unhealthy behaviours. The factors identified as areas of concern for preconception care include chronic diseases, infectious diseases, reproductive issues, genetic/inherited conditions, medications and medical treatment, and personal behaviours or exposures.² Of these issues, a number have proposed clinical practice guidelines. Folic acid supplementation, for example, is considered essential to reduce the incidence of neural tube defects in the fetus, and thus supplementation ideally begins 3 months prior to conception.² Prevention of congenital defects due to rubella infection is also recommended through rubella vaccination, and a similar approach is taken to hepatitis B due to the potential for vertical transmission to infants and resulting organ damage.² Management of chronic diseases such as diabetes and hypothyroidism is also considered important in pregnancy to reduce the effects on the developing fetus. Likewise, conditions managed with medication such as isotretinoids and anti-epileptic medication need to be approached with lower dosages or alternative medication as these drugs are teratogens and as such can cause birth defects.²

If a couple have been attempting to conceive for at least 12 months, then initial assessment of hormone levels, ovulation, weight/body composition and semen analysis is undertaken. In the longer term, gynaecological examination to check for physical

factors interfering with conception (e.g. scarring from previous STI or endometriosis) is conducted.

Once the diagnosis of infertility has been made, the conventional treatment approach varies depending on the diagnosed reason for the infertility. If the diagnosis is male infertility, then the treatment will depend on the seminal analysis. If azoospermia (absence of sperm) is diagnosed, then conception relies upon donor insemination.⁶ However, if there is severe oligospermia (fewer than 5 million sperm), then a single spermatozoon is recovered from the epididymis and microinjected in the ovum. This has a 30% success rate.⁶ There have been some attempts to increase the sperm count of men with oligospermia using hormonal therapy (testosterone analogues and antioestrogens) with limited documented benefit.⁶ Another alternative in this situation is in vitro fertilisation.⁶

Alternatively, infertility may be due to female reproductive pathophysiology. Anovulation is managed by encouraging the woman to aim for an appropriate body composition, and use of an antioestrogen drug (clomifene), which has resulted in a 70% conception rate in amenorrhoeic women.⁶ If tubal damage has been diagnosed, there are really only two options available: microsurgery to attempt to repair the fallopian tubes, or in vitro fertilisation. With a diagnosis of cervical hostility, the traditional conventional approach is to encourage the couple to use condoms for 6 months in the hope that the antibodies attacking the sperm will be eliminated. Other, more invasive approaches include ingestion of oral corticoids by the male in the first 10 days of the woman's cycle, the use of washed sperm, or in vitro fertilisation or gamete intrafallopian transfer techniques.⁶

RISK FACTORS

Like many conditions, factors that increase the risk of infertility can be both inherited and due to lifestyle. Lifestyle factors that contribute to infertility include common concerns such as cigarette smoking and alcohol misuse, but also extend to the use of certain prescription medications.

Cigarette smoking adversely affects fertility in both males and females.^{7–10} Smoking affects sperm production, motility, morphology and incidence of DNA damage in males;¹¹ this may be explained by increased reactive oxygen species, which has been linked with lowered sperm concentration, motility and morphology.¹² Cigarette smoking in females may affect the follicular microenvironment, and may cause alteration of hormone levels in the follicular phase.¹¹ Both active and passive smoking have been demonstrated to increase zona pellucida thickness; this may make it more difficult for sperm to penetrate.¹³ In active smokers, the effect of delayed conception is increased with the number of cigarettes smoked.⁹ Despite these statistics, more than 10% of pregnant women continue to smoke cigarettes.¹⁴

Caffeine intake may also adversely affect fertility outcomes.¹⁵ Some research has found that coffee and/or tea intake greater than six cups a day is associated with reduced fertility.¹⁰ However, other researchers assert that coffee and tea consumption associated with reduced fertility rates in males and females is not dose related, and that constituents other than caffeine may also have an effect.⁸ Other drug use, such as recreational drugs and alcohol, may also contribute to certain subtypes of infertility.¹⁵

Another lifestyle factor that may affect fertility is diet and its associated nutritional status. A range of dietary constituents have been linked with various aspects of infertility including *trans*-fatty acids,¹⁶ iron,^{17,18} antioxidants,^{19,20} selenium²¹ and zinc.²² Increasing intake of vegetable protein and replacing animal protein may also reduce the ovulatory

infertility risk.²³ Similarly, a high glycaemic load diet and overall high dietary carbohydrates have also been associated with increased ovulatory infertility.²⁴

Psychological stress is an added risk factor for reduced fertility in females²⁵ and males.²⁶ Depression in males has been correlated with decrease in sperm concentration and poor coping mechanisms have been associated with increased occurrence of early miscarriage.²⁶

Both maternal and paternal age have a bearing on the fertility level of a couple. Older women experience more difficulty achieving and maintaining pregnancy, and are less likely to deliver a healthy infant than younger women.²⁷ In females spontaneous cumulative pregnancy rates begin to decline as early as 31–35 years of age.²⁷ One-third of women aged 35–39 years of age will experience difficulty achieving pregnancy, and half of women aged 40–44 years will have an impaired ability to reproduce.²⁷ Increasing maternal age results in a decreased number of oocytes, decreased oocyte quality, uterine age-related changes affecting endometrial receptivity and neuroendocrine system ageing.²⁷

Another general risk factor to consider when approaching preconception care is the presence of underlying disease. Women with a chronic disease such as diabetes have an increased risk of congenital abnormalities in their offspring, but are known to have improved birth outcomes when they plan their pregnancies and use preconception care.²⁸ Coeliac disease is another condition which is known to incur higher miscarriage rates, increased fetal growth restriction and lower birth weights.²⁹ Although not a disease, obesity may also affect fertility for both males³⁰ and females.³¹ Sexually transmitted infections, particularly chlamydia and gonorrhoea, may lead to infertility.¹⁵ Infection of any nature may be associated with reduced sperm motility.³² Other conditions may affect fertility but, rather than the disease being detrimental, it is the medication used to manage the condition which is problematic. Several different types of medications, including hormones, antibiotics, antidepressants, pain-relieving agents, and aspirin and ibuprofen when taken in the middle of the cycle, have been reported to affect female fertility.⁴ With this in mind, it is important to address any underlying health issues, resolving them where possible, to reduce reliance on medication. Alternatively, where the condition cannot be resolved, exploration of substitute medication may be necessary.

KEY TREATMENT PROTOCOLS

A key naturopathic principle to be considered when supporting couples with fertility issues is to treat the whole person. It is vital that the approach to the development of a treatment plan for such couples is patient-centred, and does not make assumptions about their individual needs without diligent exploration of their health history and current health complaints. Such exploration must go beyond reproductive health, as a number of conditions not directly linked to the reproductive system have been associated with infertility. Examples of such conditions are inflammatory bowel disease,³³ thyroid disease³⁴ and type 1 diabetes.³⁵ Other conditions more

NATUROPATHIC TREATMENT AIMS

- Address lifestyle related risk factors:
 - smoking
 - caffeine intake
 - body mass index (BMI)
 - stress
 - diet.
- Ensure sufficiency of key nutrients.
- Address confounding and high risk conditions:
 - PCOS
 - endometriosis
 - hormone imbalances
 - thyroid imbalances
 - semen parameters.

directly associated with the reproductive system which may need to be addressed include endometriosis³⁶ and polycystic ovarian syndrome.³⁷

Underlying conditions aside, preconception care will still benefit many couples by promoting health. Many lifestyle factors dramatically affect fertility, birth success and infant health.¹¹ Preconception care must address these factors in order to promote fertility, conception and healthy pregnancy outcome. A study found that 81% of couples previously classified as infertile were able to conceive within 2 years of commencing an individualised preconception program.³⁸

In general, due to the individual nature of preconception care, the treatment interventions used will vary significantly between couples; however, there are some remedies which are more commonly used. Common herbal medicines that may be useful when supporting couples during preconception care include *Vitex agnus-castus* and *Tribulus terrestris*. *Vitex agnus-castus*, or chaste berry, is used traditionally in fertility disorders, particularly for women with progesterone deficiency or luteal phase defects. No large studies have explored this role; however, a randomised, placebo-controlled trial (RCT) with 96 women with various fertility disorders (secondary amenorrhoea, luteal insufficiency and idiopathic insufficiency) taking *Vitex agnus-castus* for 3 months resulted in women with secondary amenorrhoea and luteal insufficiency achieving pregnancy twice as often as those in the placebo group.³⁹ Previous smaller trials show similar results.^{40,41} *Tribulus terrestris* has also been associated with improving conception outcomes in women with endocrine sterility.⁴²

Window of fertility

The first priority when approaching preconception care and couples with fertility issues is to establish the window of fertility. The window of fertility is probably best defined as the period in the 6 days leading up to ovulation, when in theory the oocytes and sperm should have maximum viability and survivability.^{43,44} However, in an individual clinical setting this can be more accurately garnered through analysis of intermenstrual intervals, cervical mucus and basal body temperature charts (see Chapter 20 on polycystic ovarian syndrome). Intercourse is most likely to result in pregnancy when it occurs within the 3 days prior to ovulation.

Although certainly not a prerequisite for pregnancy to occur, the probability of conception is highest when cervical mucus (vaginal secretions) is slippery and clear (see Figure 31.2).^{45–47} When combined with basal body temperature charts these simple and cheap analyses are able to predict peak fertility far better than menstrual charts alone. Cervical mucus analysis alone has been demonstrated to better predict peak fertility than either basal body temperature charts or biochemical ovulation detection kits based on LH.⁴⁸

Monitoring cervical mucus may have other practical benefits as water-based vaginal lubricants can inhibit sperm motility by 60–100% in vitro.⁵⁰ Mineral oil, canola oil or hydroxyethylcellulose-based lubricants do not seem to have this effect.

Diet

Dietary change is an important intervention in any preconception plan and, although the focus is on a general healthy diet for couples, some specific dietary choices have been found to have direct benefits for fertility. Replacing animal protein with vegetable protein, for example, has been found to be beneficial in women seeking to get pregnant.⁵¹ Similarly, low-fat dairy products have been connected with higher rates of anovulatory infertility, and higher dietary intake of *trans*-unsaturated fats have been linked with increased risk

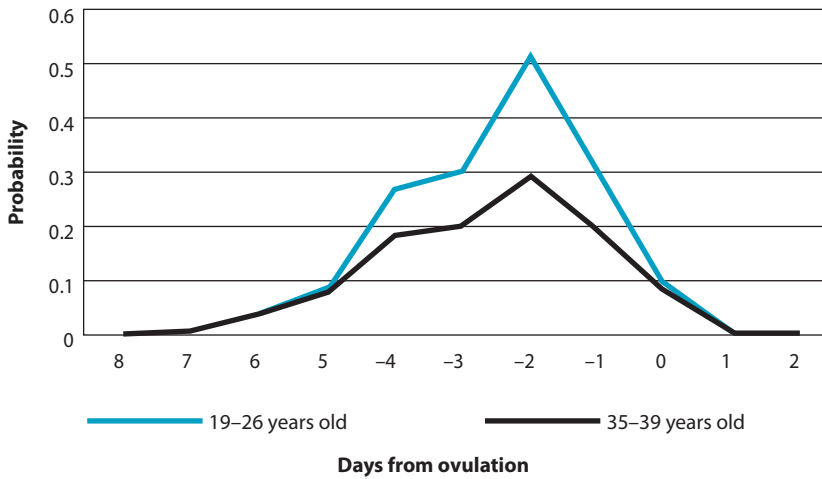


Figure 31.2 Probability of pregnancy by cycle day, involving recurrent intercourse, by age⁴⁹



LET'S TALK ABOUT SEX

Trying to conceive is a stressful time for any couple and this stress can creep into the bedroom. Some couples may have forgotten to have intercourse as often as required or have turned it into a chore. Others may have been trying for so long that they even forget to have intercourse at all—except for once a month according to the calendar. This places further stress on the couple and may be ultimately counterproductive. Couples should maintain intimacy and engage in sexual activity as they desire, not purely based on ovulatory cycles. A well-timed weekend away or regular date night may improve both the relationship and the chances of a couple falling pregnant.

of ovulatory infertility.⁵² **Organic food** may also be of benefit by reducing the potential exposure to environmental chemicals. Ultimately, the consensus seems to be that encouraging healthier eating habits more broadly improves fertility outcomes. As such, a healthy eating plan that includes foods with high levels of nutrients should be encouraged. High levels of **brightly coloured fruit and vegetables** to provide antioxidants plus **good protein sources** (meat if eaten, cheese, eggs, tofu if vegetarian; vegans need to be particularly careful with protein levels) and **good-quality carbohydrates** (wholemeal and wholegrain) should be routinely recommended (see Appendix 3, 'Food sources of nutrients').

Body composition

Overweight and obese women are less likely to conceive than those of normal weight.¹⁵ These women also experience increased risk of pregnancy complications and adverse pregnancy outcomes in comparison to women who weigh less. Conversely, women who are very underweight may also experience problems conceiving.¹⁵ Reproductive function can be affected by both obesity and low body weight, due to hormone imbalances and ovulatory dysfunction.¹¹ Overall, the relative risk of ovulatory infertility is increased for body mass index (BMI) below 20.0 kg/m² or above 24.0 kg/m².⁵³ There appears to

be a 7% increase in the rate of fetal anomaly for each unit of BMI above 25.⁵⁴ Obesity affects fertility in ways that are complex and not well understood; however, the association with functional hyperandrogenism and hyperinsulinaemia is thought to play an important role.⁵⁵ Abdominal obesity in women with polycystic ovarian syndrome (PCOS) is considered to be co-responsible for the development of hyperandrogenism and chronic anovulation through mechanisms involving decreased concentrations of sex-hormone-binding globulin in the blood and insulin-mediated overstimulation of ovarian steroidogenesis.⁵⁵ Obesity may also contribute to reduced outcomes of IVF/ICSI procedures by promoting resistance to clomiphene and gonadotrophin-induced ovulation.⁵⁵ It has been demonstrated that weight loss in obese women can improve fertility through the recovery of spontaneous ovulation, and that others will have improved responses to ovarian stimulation in infertility treatment.^{56,57}

Attenuating the hormonal imbalances resulting from high body fat can be achieved through both diet and exercise (as discussed in Chapter 20 on polycystic ovarian syndrome). Even after 12 weeks of dietary and exercise intervention, favourable menstrual and metabolic outcomes conducive to conception could be gained in infertile, overweight women.⁵⁸ In fact, lifestyle modification proved more effective than fertility drugs in inducing ovulation in women with anovulatory disorders.⁵⁹ However, it is important to note that weight loss needs to be approached responsibly, as rapid weight loss is understood to lower progesterone levels, slow follicular growth and inhibit the luteinising hormone surge, disallowing ovulation.⁶⁰

Lifestyle activity

Maintaining an active lifestyle is beneficial in promoting both male and female fertility; however, moderation is very important. While moderate exercise may improve the chances of conceiving spontaneously or through fertility treatment,¹¹ excessive physical exercise is associated with a spectrum of reproductive dysfunctions in both males and females. Female fertility issues associated with excessive exercise range from luteal-phase defects to anovulation to infertility and finally to amenorrhoea.⁵³ Increase in vigorous activity (but not moderate activity) is associated with reduced relative risk of ovulatory infertility,⁵³ and has been linked to poor IVF outcomes.⁶¹ This concern has also been found to affect male fertility, through subclinical changes in their reproductive hormone profile and semen parameters.⁶² For example, male endurance runners have been found to have a reduction in total and free testosterone, alterations in luteinising hormone release, and in pituitary responses to gonadotrophin-releasing hormone.⁶² Furthermore, there has been evidence of a change in the semen parameters of some endurance athletes, such as low normal sperm count, decreased motility and various morphological changes.⁶²

This apparent contradiction between the benefits and risks of exercise can be best explained by the role of exercise in preventing and managing conditions that detrimentally affect fertility, such as polycystic ovarian syndrome and obesity.⁶³ In contrast, any level of activity which induces metabolic stress will interfere with the hypothalamus–pituitary–gonadal axis, and therefore affect fertility.⁶⁴ Overall, the focus when supporting couples prior to conception should be on moderate exercise that does not place undue stress on their systems.

Reduce risk factors

Factors such as smoking, caffeine intake and alcohol consumption may adversely affect fertility outcomes and should be reduced. Even if fertility is not yet a concern for a couple, these risk factors will still need to be addressed as they all have negative effects

on the developing fetus and infant health. Maternal smoking during pregnancy, for example, has been linked to increased risk of wheezing in infants up to 2 years old⁶⁵ and reduced fetal brain development,⁶⁶ and may increase the infant's risk of adult development of diabetes, hypertension and metabolic syndrome.⁶⁷ Similarly, high alcohol consumption during pregnancy puts the developing fetus at risk of fetal alcohol syndrome.⁶⁸ Even lower-level intake can affect the neuroendocrine and behavioural functions of the offspring.⁶⁹

Stress

The emotional journey of a subfertile couple is complex. Seemingly innocuous events such as friends falling pregnant, family events and birthdays may trigger underlying anxiety issues (see Figure 31.3).

The process of undergoing infertility treatment itself can also be stressful and exacerbate anxiety, depression and stress, often enough to negatively affect pregnancy outcomes.^{72,73} This may be due to increased cortisol secretion, resulting from a normal stress response, down-regulating the hypothalamus–pituitary–gonadal (HPG) axis. It has been postulated that this may occur by inhibiting gonadotrophin-releasing hormone's (GnRH) release of follicle-stimulating hormone (FSH) and luteinising hormone (LH) from the pituitary.⁷⁴

As such, **counselling** or **psychological support**, particularly interventions which focus on stress management and coping-skills training, should be strongly recommended throughout this process.⁷⁵ It is equally as important for the infertile couple to build a support network. Both attending support sessions and using cognitive behavioural interventions were equally effective in reducing the emotional aspects of infertility and improving the chances of pregnancy.⁷⁶ **Music therapy** has also been associated with positive pregnancy outcomes.⁷⁷ Overall, couples should be encouraged to take part in stress reduction activities at all stages of preconception and pregnancy. Anecdotal stories of previously infertile couples conceiving after ceasing trying or while on holiday are not to be ignored.⁷⁸

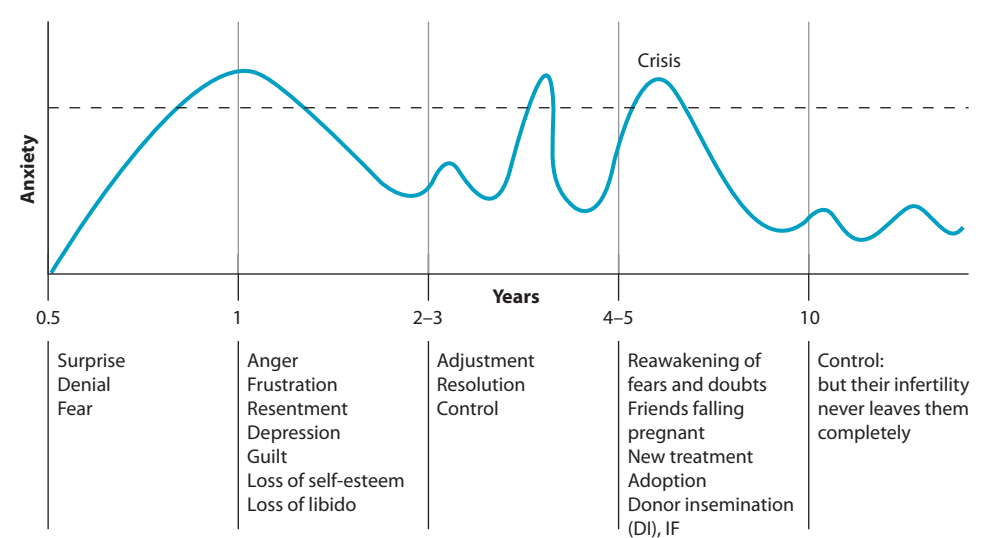


Figure 31.3 Emotional responses to infertility^{70,71}



RELATIONSHIP ISSUES

Preconception can be an exciting time for a couple, but it can also be challenging. Sometimes in the lead-up to starting a family relationship issues that may not have been apparent previously can surface. The process of becoming pregnant can consume time and substantial resources—emotional, physical and financial. If fertility problems become apparent and assisted fertility in the way of procedures such as IVF is required, this can further add to feelings such as loss of control, distance between the couple and feelings of guilt or blame. All of these issues can be a significant source of stress in the relationship. It is important that a couple remember that the reason they want to bring a baby into the world is that they are two people in love. Nurturing the relationship by continuing to do things as a couple is very important. Small suggestions like a candlelit dinner occasionally or a walk along the beach together should be as much a part of the preconception prescription as any naturopathic medications. It is also important that a couple maintain intimacy by continuing the physical side of their relationship when they feel like doing that, and not only adhere to ovulation cycles and fertility plans.

Environmental concerns

Exposure to herbicides, fungicides, pesticides and other chlorinated hydrocarbons has been associated with decreased fertility and a higher risk of spontaneous miscarriage.^{79,80} Further to this, it should be noted that, although over 140,000 chemicals are in common use in today's society, evaluation of the effects on reproduction of common physical and chemical agents has occurred in only 5% of substances.⁸¹ With this in mind, it is important to investigate potential exposure to environmental chemicals such as pesticides, herbicides, household chemicals, paint and paint thinners, and plastics. Paradoxically many couples will subject themselves to high levels of environmental toxins during 'nesting' activities while trying to conceive or during pregnancy. While preparation for the child is certainly important, activities that include exposure to dust, paint or other chemicals and substances that release toxins, such as home renovations, may adversely affect pregnancy outcomes and should be considered carefully.

If exposure is identified, and particularly if it is occupational (for example, factory workers, tradesmen, farmers and horticulturalists), then protective measures must be taken. Such measures include appropriate occupation health and safety interventions like wearing protective clothing and masks.⁸² Beyond this, the preconception treatment plan needs to incorporate suitable detoxification protocols (see the box on liver detoxification in Chapter 19 on endometriosis).

Immune dysfunction

Immune system imbalances may adversely affect fertility outcomes through a number of ways, including high generalised inflammation and antibodies targeted to key tissues. High levels of inflammatory prostaglandins, for example, may reduce uterine receptivity to fertilised embryos,⁸³ possibly by affecting the regulation of genes necessary for human endometrial receptivity.⁸⁴ Chronic inflammation may also contribute to the development of anatomic abnormalities such as pelvic adhesions and occluded fallopian tubes, as well as premature ovarian failure.⁸⁵ Causes of inflammation in reproductive tissues vary and may include sexually transmitted infections such as *Chlamydia trachomatis*,



INFLAMMATION AND HEALTHY REPRODUCTION

Inflammation is often approached as an undesirable adversary in the human body. In fact, inflammation is a mechanism necessary for the normal and healthy reproductive process. As the luteinising hormone (LH) surge occurs prior to ovulation, LH stimulates granulosa cells to secrete inflammatory mediators (prostaglandins and cytokines) and progesterone. These compounds all trigger the secretion of matrix metalloproteinases, which break down the extracellular matrix, thereby allowing for follicular rupture and ovulation.⁸⁵ As such, indiscriminate use of anti-inflammatory interventions in preconception care should be avoided.

endometriosis and autoimmune conditions.⁸⁵ Autoimmune conditions which can contribute to infertility may be non-specific, such as type 1 diabetes mellitus and Hashimoto's thyroiditis, or specific, such as antibodies that target FSH and LH and their receptors.^{86,87} Another such example is antibodies that target ovaries and sperm.⁸⁴ It is worth noting, however, that the inflammatory response is also an important mechanism within healthy, normal reproductive function (see the box on inflammation and healthy reproduction). With this in mind, various measures to reduce inflammation systemically and specifically can be found in other relevant chapters.

Nutritional medicines

The primary conventional focus of nutrient supplementation in preconception care is on the role of **folic acid** in preventing neural tube defect.⁸⁸ The benefits attributed to folic acid in the prevention of this condition require maternal sufficiency in the first 28 days of gestation, before many women know they are pregnant.⁸⁸ It is this knowledge that has led to public health interventions such as folate fortification of bread flour and further supplementation of 400 µg/day for women of reproductive age.⁸⁸

Folic acid is not the only nutrient required in preconception and the early stages of gestation. A recent longitudinal study⁸⁹ observed the effect of pregnancy on the micronutrient status of the mothers. It was noted that, while folate levels decreased slightly during pregnancy and remained decreased up to 6 weeks after delivery, **vitamin B12** progressively declined throughout gestation and reached marginal or deficient levels.⁸⁹ This is of particular concern, as vitamin B12 has been overlooked as an important nutrient for preconception supplementation. Low maternal vitamin B12 status has been associated with a threefold risk of neural tube defect.⁹⁰ This deviates from the previous approach to neural tube defect prevention, which has been firmly focused on folic acid supplementation and fortification of food. In fact, the focus on folic acid fortification of food, such as bread flour, may be contributing to a masking of vitamin B12 deficiency and an increased risk of neural tube defect⁹¹ (see the box on vitamin B12 and folate).

Various multivitamin and antioxidant nutritional supplements have improved pregnancy rates in those undergoing assisted reproduction⁹² or lowered time to conception in couples seeking preconception care.^{92,93} Preconception multivitamin use has also been associated with a higher incidence of multiple births for unknown reasons.⁹⁴ Folate needs to be taken at least 3 months prior to conception for optimal benefit in reducing neural tube defects or leukaemia development in the fetus. However, it is also associated with decreased incidence of ovulatory infertility more generally.⁹⁵ Vitamin C



VITAMIN B12 OR FOLIC ACID?

Folic acid has been used for a number of years to prevent neural tube defect;⁸⁸ however, recent research has identified that vitamin B12 is also important in preventing this condition.⁹⁰ With this in mind, the most predictable course of action may be to incorporate vitamin B12 supplementation into standard preconception care approaches alongside folic acid. Unfortunately, just as some concerns regarding the risks of folic acid supplementation masking vitamin B12 deficiency have been raised,⁹¹ excess vitamin B12 intake, resulting in potential cobalt toxicity,⁹⁷ may also be a concern. To avoid this, and to stay true to the naturopathic patient-centred approach, assessing the most appropriate nutrients required for supplementation and the relevant dosages are vital. Folic acid is found predominantly in legumes and green leafy vegetables, while vitamin B12 is found in its most bioavailable form in animal products.⁹⁸ As such, an assessment of a patient's diet will provide an initial indication as to whether supplementation of folic acid and/or vitamin B12 is required. In general, though, it is important to remember that the absorption of vitamin B12 is an incredibly complex process that relies on healthy gastric, pancreatic and intestinal function, and that dysfunction in any one of these organs can compromise B12 status.⁹⁸ A more thorough assessment of sufficiency of these nutrients can be gleaned through testing. The most accurate test to determine folic acid status is red blood cell folate, not the commonly used serum folate, which does not correlate with tissue stores.⁹⁹ Vitamin B12 status can be assessed using serum cobalamin, which is more specific and stable compared with serum folate; however, both pregnancy and folate deficiency can result in false low readings. A more accurate assessment, which is independent of both of these conditions, is that of methylmalonic acid. Unfortunately, this test is much more expensive and technically demanding.¹⁰⁰

supplementation has also had improved fertility outcomes in women with luteal phase defects.⁹⁶

The male partner

It is important to realise that in 20% of infertile couples males are the sole cause of infertility and are an important contributing factor in a further 20–40% of infertile couples.¹⁰¹ Although many infertile men may have physical or structural conditions that require surgical intervention, many may have reversible issues that can be corrected with non-invasive measures. Men also experience declining fertility as they age—most profoundly after the age of 55 years but even men over the relatively young age of 35 years have half the chance of successfully inseminating as men under the age of 25 years.¹⁰²

A decline in male fertility has been reported over the past few decades in a number of countries, though this has been controversial.¹⁰³ It has been suggested that environmental and lifestyle factors such as increased occupational chemical and pesticide exposure are at least partly responsible for this decline.^{104–106} Oestrogen-like products are thought to be partly responsible. The fact that organic farmers have higher sperm counts than regular farmers or other exposed occupational groups lends further credence to this theory.¹⁰⁷ Other environmental and lifestyle factors that may be affecting fertility include wearing tight-fitting clothing, using hot baths and spas and having occupations that require long

periods of sitting down, as these behaviours all increase scrotal temperature.¹⁰⁸ Dietary intake must also be considered, as it may affect semen quality. Men consuming diets high in meat and dairy products¹⁰⁹ and soy protein¹¹⁰ have compromised semen parameters, whereas diets high in fruits and vegetables show benefit.¹⁰⁹ The advantage in a fruit- and vegetable-rich diet may be attributed to an increased antioxidant intake.¹¹¹

Beyond diet and lifestyle, some specific nutrients have been identified to improve fertility in men. For example, there is evidence that **coenzyme Q10** supplementation can improve semen parameters in men,^{112,113} while **vitamin C**, **vitamin E**, **beta carotene**, **folate** and **zinc** are important for semen quality.⁴ A similar trial that identified increased pregnancy rates in couples with severe male infertility when taking an antioxidant supplement containing ascorbic acid, zinc, vitamin E, folate, lycopene, garlic oil and selenium has been conducted.¹¹⁴ In contrast, selenium has been demonstrated to improve sperm quality and motility in subfertile men, but not those diagnosed with infertility,^{115–117} or conversely with normal testicular selenium levels.^{118,119} Similarly, L-carnitine has been associated with increased semen quality and sperm concentration, particularly in groups with lower baseline levels,^{120–123} though one trial suggested that this may be true only in those with normal mitochondrial function.¹²⁴

Assisted fertility procedures

Assisted reproductive technologies encompass a spectrum of methods and are valid options for infertile couples (see Table 31.2). However, the usefulness of these therapies needs to be considered by any prospective couple in the context of the costs and risks. For example, a systematic review of studies measuring the prevalence of birth defects in infants conceived using assisted reproductive technologies found a 30–40% increased risk.¹²⁵ Furthermore, the average cost of IVF for Australian women is \$32,903,¹²⁶ while the success rate is 10% for a single IVF procedure, and increases to 40% if the procedure is repeated five times.⁶ Finally, the process of IVF requires constant emotional adjustment through each phase of the process,¹²⁷ and can be debilitating for the woman in

Table 31.2 Types of assisted reproductive technologies

TYPE	PROCEDURE	PREGNANCY RATE*
Assisted insemination with husband's sperm (AIH)	Sperm are transferred by catheter into uterus or fallopian tube.	Up to 15% per cycle
In vitro fertilisation (IVF)	Fertilised eggs are transferred in to the uterus or fallopian tube.	10–25% per cycle; depends on maternal age
Gamete intrafallopian transfer (GIFT)	Unfertilised eggs and sperm are transferred into one or both fallopian tubes using laparoscopy or transvaginal ultrasound.	Up to 30–40% per cycle
Intracytoplasmic sperm injection (ICSI)	Sperm is injected into the egg.	More than 50% per cycle
Zygote intrafallopian transfer (ZIFT), tubal embryo stage transfer (TEST)	Zygote or early embryo is transferred into the fallopian tube using laparoscopy or transvaginal ultrasound the day after egg pick-up.	Up to 30–40% per cycle

*Adapted from Oats and Abraham 2005⁶ Note that pregnancy rate is not the same as live birth rate. Naturopathic treatment of couples undergoing assisted reproductive techniques should not cease once these interventions have resulted in a successful pregnancy.

particular. To support this, a questionnaire study¹²⁸ found that financial burden (23%), psychological stress (36%) and lack of success (23%) were the most predominant reasons couples discontinued IVF programs. In particular, a combination of lack of success and psychological stress was noted in 18% of participants.

Often this course of action is used as a symptomatic approach to infertility and does not have the added benefit of preparing the body for a healthy pregnancy or allowing for improved success of subsequent births. In one study 65% of couples who had previously undergone multiple IVF cycles were able to conceive within 2 years of a preconception program.³⁸ However, there will be instances where referral to this procedure will be appropriate.

Most patients attending assisted reproduction will be using some form of complementary therapy and are likely to be consulting a complementary therapist; they are perhaps using several options concurrently.¹²⁹ Therefore it may be prudent to identify the broad scope of treatment the patient is undertaking so as to reduce the risk of negative interactions. Acupuncture on the day of embryo transfer is demonstrated to have a beneficial effect on live births.¹³⁰ L-arginine supplementation can improve the response rates of poor responder women undergoing assisted reproduction.¹³¹

Pregnancy

Pregnancy is one area that lends itself to naturopathic treatment for a number of reasons. Although it is not a disease state (though it has certainly been managed and thought of as one in the past) it is a significant life transition that encompasses the mind, body and spirituality of the mother. It is also a time when the power of nature and the abilities of the body are apparent and there is a greater recognition of the immediate need and benefit of optimal health. Pregnancy care is also a time in which the accepted aim of treatments is to be as minimally invasive as possible. Therefore the aim of the naturopath is to avoid unnecessary treatment of any kind and instead support optimal health for the mother and child.

The management of the pregnant woman should be in conjunction with a qualified specialist practitioner—a midwife and/or obstetrician. Midwifery and naturopathy have traditionally had a supportive relationship due to their shared belief that pregnancy and birth are normal physiological processes that can be supported through adequate nutrition, psychological and physical support when required and avoidance of harmful substances.

Decision making when supporting the pregnant woman requires careful thought. The potential for any therapy to do harm needs to be considered. This includes not only instances of possible direct harm to the fetus or mother (for example, the use of potentially teratogenic herbs—see ‘Safety in pregnancy’ below), but also the possibility of indirect harm. Indirect harm includes such things as potentially delaying a useful therapy (for example, in the progression of preeclampsia to toxemia) or financially exploiting the patient through the use of unnecessary or ineffective therapies. It can be easy to overcomplicate treatment in the pregnant woman, and a simple approach is often best.

DIETARY REQUIREMENTS

Dietary requirements in pregnancy encompass nutrients that must be included and foods that should be avoided. Additional energy is needed in pregnancy and lactation to cover the needs of the growing fetus, the placenta and expanding maternal tissues, and additional maternal effort at rest and in physical activity, as well as the production

of breast milk during lactation. Nothing additional over pre-pregnancy requirements is needed in the first trimester, though in the second trimester an extra 1.4 MJ/day and in the third trimester an extra 1.9 MJ/day over pre-pregnancy levels should be consumed.¹³² **Protein** requirements also increase to 1.1 g/kg of body weight, as does the recommended daily intake of a number of nutrients including **foliac acid**, **vitamin C**, **iron**, **zinc** and **calcium** (see Table 31.3).

Table 31.3 Key nutrients in pregnancy

NUTRIENT	EFFECT	COMMENT
DHA	Accumulates in the developing brain, and is important for prenatal and post-natal neurological development.	Can be easily converted via desaturases from α -linolenic acid.
Vitamin A	Important for the regulation of gene expression and for cell differentiation and proliferation.	Direct studies of vitamin A status are lacking, but excess retinol is a known teratogen. The threshold risk is still unclear, but the upper intake level is 3000 μ g/day.
Folate	Required for normal cell division, and methylation during nucleotide synthesis. Associated with prevention of neural tube defect.	Supplementation still needs to be approached judiciously as the upper limit is only 1000 μ g/day and some women already have folate-rich diets.
Vitamin B12	Supports methylation of nucleotides in conjunction with folate. Also essential for neurological function. Absorption decreases during pregnancy.	Although vitamin B12 can be stored in adults long term, only newly absorbed vitamin B12 is readily transported across the placenta. Vegan women will need to supplement.
Biotin	Animal studies imply that deficiency is teratogenic.	More evidence relating specifically to pregnant women is required to make confident clinical decisions.
Calcium	Required for bones, teeth, vascular contraction, vasodilation, muscle contraction, nerve transmission and glandular secretion.	Most fetal accretion occurs in the third trimester, and this is lower when maternal intake is low.
Chromium	Potentates the action of insulin.	Chromium is depleted throughout pregnancy and fetal tissue levels decline after birth, suggesting the need for deposition during pregnancy.
Iodine	Required for thyroid hormones, and therefore associated with myelination of the central nervous system and general metabolism. Most active in perinatal periods.	Deficiency is damaging to the developing brain and includes mental retardation, hypothyroidism and goitre.
Iron	Required for haem proteins and other iron-dependent enzymes.	Deficiency in pregnancy is associated with increased perinatal maternal and infant mortality, premature delivery and low birth weight
Zinc	A cofactor to nearly 100 enzymes, with catalytic, structural and regulatory functions.	Maternal zinc deficiency may lead to prolonged labour, intrauterine growth retardation, teratogenesis and embryonic or fetal death. Lower dietary intakes can lead to a higher incidence of premature deliveries.

Source: Adapted from Turner 2006¹³⁵

A number of dietary practices should be avoided or limited.¹³³ Alcohol consumption during pregnancy is linked to a spectrum of disorders in the infant ranging from fetal alcohol syndrome through to alcohol-related birth defects or alcohol-related neuro-developmental disorders.¹³³ There is no safe level of alcohol intake during pregnancy, and as such pregnant women should be discouraged from any consumption (see the box on ethanol-based herbal extracts and pregnancy). Fish consumption must also be approached with care in pregnancy due to the risks associated with fetal exposure to methylmercury. In general, this compound accumulates from industrial pollution (although it also occurs naturally) in some of the larger, longer-lived fish, and those that consume other fish.¹³³ Examples include shark, swordfish, king mackerel and tuna.¹³³ In contrast, sardines and white fish have lower mercury levels and as much as 360 g can be safely consumed per week.¹³³ Another risk is food contamination with *Listeria monocytogenes*, which can cause spontaneous abortion, stillbirth and fetal infection (listeriosis).¹³³ To prevent this illness, pregnant women should avoid unpasteurised milk, undercooked or raw animal products, refrigerated smoked food, pâtés or meat spreads, soft cheeses, and unwashed fruit and vegetables.¹³³ Caffeine consumption must also be approached with caution during pregnancy, as it has been connected with fetal growth restriction and low birth weight infants.¹³⁴ One of the concerns surrounding caffeine is that the enzyme responsible for caffeine clearance, CYP1A2, is not present in fetal tissue, although caffeine can easily pass through the fetoplacental barrier.¹³⁴ For this reason, it is important that if the pregnant woman is going to consume caffeine their own phase 1 detoxification pathway is functioning at its optimum. This should be addressed in preconception treatment, however, not during pregnancy. It has been recommended that women should not consume more than 200 mg/day of caffeine throughout gestation.¹³⁴

Appropriate weight gain

There should be relatively little maternal weight gain until the second and third trimesters, with the bulk of the weight gain in the third trimester (see Figure 31.4). Increased weight gain may lead to an increased risk of gestational diabetes, which has significant health implications for both mother and child.⁴ High blood-sugar levels are used as an energy source by the growing baby and will therefore lead to increased birth weight. Although there are several negative health consequences for the baby associated with



ETHANOL-BASED HERBAL EXTRACTS AND PREGNANCY

It is recommended that all pregnant women minimise their alcohol consumption and abstain if possible.¹³³ But where does that leave the prescription of ethanol-based herbal extracts? If possible, other forms of herbal products should be prescribed to pregnant women to keep alcohol consumption to a minimum. This can include preformulated tablets, infusions, decoctions or glycertracts. However, the value in an individualised and extemporaneously dispensed formula of ethanol-based herbal extracts is well known to most practising naturopaths. If it is deemed that the best treatment for the individual is in the form of an ethanol-based herbal extract, then a useful approach is the addition of hot water to the tincture prior to each dose. This encourages evaporation of the alcohol and, although it may not eliminate the alcohol completely, it will reduce the amount remaining in the tincture.

high birth weight and gestational diabetes, one of the main concerns is the potential labour complications associated with giving birth to a larger baby. Patients should be made aware of these potentially alarming practical complications in addition to the negative health aspects.

Another potential cause of inappropriate weight gain is oedema, which may be linked to preeclampsia. Preeclampsia is a form of hypertension that occurs only in pregnancy, and is accompanied by proteinuria and excessive oedema.¹³³ Although obesity does increase the risk of developing preeclampsia,¹³³ it should not be assumed that weight gain is simply fat gain. Thorough dietary and physical assessment are needed to determine if fluid retention is an issue, or whether a high glycaemic, hypercaloric diet is the concern.

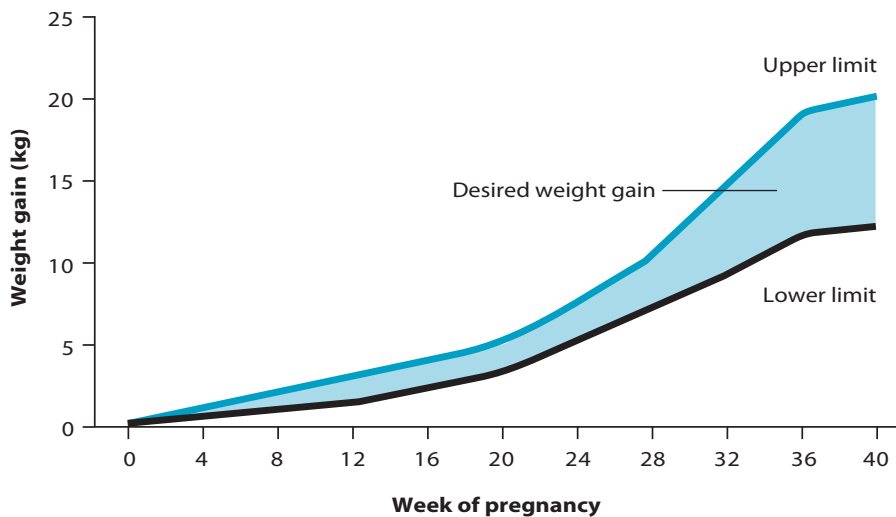


Figure 31.4 Appropriate weight gain in pregnancy

Anaemia

Maternal iron requirements increase in pregnancy because of the demands of the developing fetus, the formation of the placenta and the increasing maternal red cell mass.¹³⁶ Fetal iron requirements seem to come at the expense of maternal stores if there is insufficient intake. Even moderate iron deficiency is associated with a twofold risk of maternal death.¹³⁶ However, routine iron supplementation in women with normal haemoglobin is not associated with improved pregnancy outcomes. Furthermore, supplementation with high levels of iron increases the risk of oxidative stress, and should be approached with caution. With this in mind, one study¹³⁷ found that taking an iron supplement (60 mg **iron**, 200 µg **follic acid** and 1 µg **B12**) daily was no more beneficial than taking two tablets once per week. This may be an approach to reduce the risk of oxidative damage and still ensure iron sufficiency.

Safety in pregnancy

As the aim of pregnancy care is generally to move towards optimal health rather than treatment of particular disease states, herbal medicines and large doses of specific nutrients should generally be avoided during pregnancy (see Table 31.4). Even seemingly innocuous herbal medicines with hormonal activity or uterine activity are best avoided

during pregnancy. Although uterine tonics may have a role to play in preparation for labour, even they need to be avoided at early stages of pregnancy.

There is still a high use of many different herbal and nutritional medicines by pregnant women, and nearly three-quarters of these women do not discuss this use with their conventional physician.^{138,139} This may be due to the fact that specialist obstetricians generally have less favourable attitudes towards complementary medicines than women's non-obstetric physicians.¹⁴⁰

To assist naturopaths to determine the safety of herbal medicines, a classification system¹⁴¹ based on Therapeutic Goods Administration (Australia) and Food and Drug Administration (USA) categories for prescription medicines in pregnancy has been developed. Contraindicated herbs fit into categories D and X in this system (see Table 31.5). However, it is recommended that most herbal medicines be avoided during pregnancy unless absolutely necessary.

Partus preparator

Rubus idaeus has long been traditionally used as a 'partus preparator'—preparing the uterus for delivery and to facilitate labour.¹⁴⁵ Animal studies have suggested that *Rubus idaeus* may increase the regularity and decrease the frequency of uterine contractions.¹⁴⁶ Although no clinical studies have been conducted in humans, retrospective studies have

Table 31.4 Herbs contraindicated during pregnancy (bold indicates common herbs more likely to be encountered regularly in clinical practice)^{141–144}

<i>Abrus precatorius</i> Achillea millefolium <i>Aconitum</i> spp. <i>Acorus calamus</i> Adhatoda vasica <i>Adonis vernalis</i> Aloe vera <i>Ammi visnaga</i> Angelica archangelica Angelica sinensis <i>Apocynum</i> spp. <i>Aristolochia</i> spp. <i>Arnica</i> spp. Artemisia spp. <i>Arum maculatum</i> <i>Belladonna</i> spp. <i>Brugmansia</i> spp. <i>Brunfelsia uniflora</i> Calendula officinalis <i>Calotropis</i> spp. <i>Carbenia benedicta</i> <i>Caulophyllum thalictroides</i> <i>Catha edulis</i> <i>Chenopodium ambrosioides</i> <i>Cicuta virosa</i> Cimicifuga racemosa <i>Cinchona</i> spp. <i>Colchicum</i> spp. <i>Convallaria</i> spp. <i>Coronilla</i> spp. Corydalis ambigua <i>Crotalaria</i> spp. <i>Croton</i> spp. <i>Cynoglossum officinale</i>	<i>Daphne mezereum</i> <i>Datura</i> spp. <i>Digitalis</i> spp. <i>Dryopteris filix-mas</i> <i>Duboisia</i> spp. <i>Echium vulgare</i> <i>Ephedra</i> spp. <i>Erysimum</i> spp. <i>Euonymus europaeus</i> <i>Galega officinales</i> <i>Galanthus</i> spp. <i>Gelsemium</i> spp. <i>Heliotropium</i> spp. <i>Helleborus</i> spp. <i>Juglans canadensis</i> <i>Juniperus</i> spp. <i>Hyoscyamus</i> spp. <i>Lantana camara</i> <i>Larrea</i> spp. <i>Lathyrus sativus</i> <i>Lithospermum</i> spp. <i>Lobelia</i> spp. <i>Mandragora</i> spp. <i>Menispermum canadense</i> <i>Mentha pulegium</i> <i>Oleander</i> spp. <i>Opuntia cylindrica</i> Panax quinquefolium Panax notoginseng <i>Papaver somniferum</i> <i>Peganum harmala</i> <i>Petasites</i> spp. <i>Peumus boldus</i> Phytolacca spp.	<i>Podophyllum resin</i> <i>Pteridium aquilinum</i> Pulsatilla vulgaris <i>Rauwolfia</i> spp. <i>Rhamnus frangula</i> <i>Ricinus communis</i> <i>Robinia pseudoacacia</i> Salvia officinalis <i>Sarphthamnus scoparius</i> <i>Schoenocaulon officinale</i> Schisandra sinensis <i>Scopolia carniolica</i> <i>Semecarpus anacardium</i> <i>Senecio</i> spp. <i>Solanum</i> spp. <i>Sophora secundiflora</i> <i>Spigelia marilandica</i> <i>Staphisagria</i> spp. <i>Strophanthus</i> spp. <i>Strychnos</i> spp. <i>Strychnos gauthieriana</i> <i>Strychnos ignatii</i> <i>Symphytum</i> spp. <i>Tamus communis</i> fruit and root Tanacetum spp. <i>Teucrium</i> spp. <i>Thevetia</i> spp. Thuja occidentalis <i>Toxicodendron radicans</i> Tribulus terrestris Turnera diffusa <i>Tussilago farfara</i> Viscum album <i>Viola sebifera</i> <i>Yohimbin</i> spp.
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Table 31.5 Examples of herbs classified for use in pregnancy¹⁴¹

CATEGORY	CATEGORY DEFINITION	RELEVANT HERBS
Category A	Drugs which have been taken by a large number of pregnant women and women of childbearing age without any proven increase in the frequency of malformations or other direct or indirect harmful effects on the fetus having been observed.	<i>Rubus idaeus</i> <i>Zingiber officinale</i> <i>Echinacea</i> spp. <i>Matricaria recutita</i> <i>Panax ginseng</i> <i>Vaccinium myrtillus</i> <i>Curcuma longa</i>
Category B1	Drugs which have been taken by only a limited number of pregnant women and women of childbearing age, without an increase in the frequency of malformation or other direct or indirect harmful effects on the human fetus having been observed. Studies in animals have not shown evidence of an increased occurrence of fetal damage.	<i>Astragalus membra-naceus</i> <i>Valeriana officinalis</i> <i>Ginkgo biloba</i> <i>Hypericum perforatum</i> <i>Bupleurum falcatum</i>
Category B2	Drugs which have been taken by only a limited number of pregnant women and women of childbearing age, without an increase in the frequency of malformation or other direct or indirect harmful effects on the human fetus having been observed. Studies in animals are inadequate or may be lacking, but available data show no evidence of an increased occurrence of fetal damage.	<i>Barosma betulina</i>
Category B3	Drugs which have been taken by only a limited number of pregnant women and women of childbearing age, without an increase in the frequency of malformation or other direct or indirect harmful effects on the human fetus having been observed. Studies in animals have shown evidence of an increased occurrence of fetal damage, the significance of which is considered uncertain in humans.	<i>Andrographis paniculata</i>
Category C	Drugs which, owing to their pharmacological effects, have caused or may be suspected of causing harmful effects on the human fetus or neonate without causing malformations. These effects may be reversible. Accompanying texts should be consulted for further details.	<i>Arctostaphylos uva-ursi</i> <i>Hydrastis canadensis</i> <i>Glycyrrhiza glabra</i> <i>Aesculus hippocastanum</i> <i>Salvia mitorrhiza</i>
Category D	Drugs which have caused, are suspected to have caused or may be expected to cause an increased incidence of human fetal malformations or irreversible damage. These drugs may also have adverse pharmacological effects. Accompanying texts should be consulted for further details.	<i>Ruta graveolens</i> <i>Adhatoda</i> spp. <i>Tabebuia avellanedae</i> <i>Phytolacca</i> spp.
Category X	Drugs which have such a high risk of causing permanent damage to the fetus that they should not be used in pregnancy or when there is a possibility of pregnancy.	<i>Aristolochia</i> spp. <i>Senecia</i> spp. <i>Peumus boldus</i>

demonstrated that *R. idaeus* use is associated with a decreased rate of medical interventions required in childbirth.^{147,148} One study found that *R. idaeus* shortened labour times and reduced the incidence of pre- and postterm labour,¹⁴⁹ while another suggested it reduced only the duration of second stage of labour. A recent literature review concluded that the evidence for the use of *R. idaeus* was scarce, and more research is needed.¹⁵⁰

Chronic miscarriage

Conservative estimates suggest that 10% of first trimester pregnancies end in spontaneous abortion or miscarriage.⁴ *Viburnum prunifolium* was traditionally used by the eclectic physicians of North America to prevent miscarriage,¹⁵¹ and was embraced by obstetricians in the late 1800s for the same purpose.^{152–155} *Dioscorea villosa* and *Chamaelirium luteum* have also been traditionally used in threatened miscarriage.¹⁴² Unfortunately, more recent research into the efficacy of these herbs has not been conducted; furthermore, concerns over the accurate identification of the herb used in earlier interventions have been raised.¹⁵⁶

Other underlying factors may need to be considered and treated in cases of recurrent or threatened miscarriage. For example, an increased risk of miscarriage in both naturally conceived pregnancies and following fertility treatment has been associated with extremes of BMI,¹⁵⁷ and interventions that have addressed elevated BMI have been found to reduce the incidence of miscarriage in high-risk women.¹⁵⁸

Nausea and vomiting

Up to 80% of all pregnant women experience some nausea and vomiting,¹⁵⁹ commonly referred to as ‘morning sickness’. It has been noted, however, that one of the possible causes of nausea and vomiting in early pregnancy is elevated prostaglandin E₂, stimulated by human chorionic gonadotrophin.¹⁶⁰ Due to the important functions PgE₂ performs in early stages of pregnancy, treatment of morning sickness in the first trimester needs to be tempered with respect for the natural process of gestation.

The most common naturopathic treatment for nausea and vomiting in pregnancy is *Zingiber officinale*. *Z. officinale* has been demonstrated to be an effective treatment for nausea and vomiting in early pregnancy according to a Cochrane review.¹⁶¹ Since this review, other studies have also demonstrated positive effects,^{162–164} but some authorities have expressed concern at the high levels of *Z. officinale* in commercial herbal supplements.¹⁶⁵ Ginger tea and candied ginger are also suitable therapeutic sources in the pregnant patient. *Z. officinale* is also effective for postoperative nausea associated with childbirth.¹⁶⁶

Several large trials have demonstrated **vitamin B6** to be an effective treatment for the nausea and vomiting of pregnancy.^{167–169} The optimum dose for this is thought to be between 30 and 75 mg daily.¹⁶¹

Preeclampsia

Obesity and stress are both associated with increased risk of preeclampsia.^{170,171} Exercise can help reduce the incidence of preeclampsia.¹⁷² Insufficient protein, magnesium, calcium, iron, pyridoxine (B6), vitamin C, vitamin E, essential fatty acids and folic acid have all been directly indicated in the pathogenesis of preeclampsia.¹⁷³ Rather than focusing on one particular nutrient, consensus is moving towards nutritional education more generally as a preventive measure.

Urinary tract infections

Women experience urinary tract infections more frequently during pregnancy. *Vaccinium macrocarpon* is an effective naturopathic treatment with a documented safety profile in pregnancy and therefore offers a valid therapeutic choice.^{174,175}

Another potentially beneficial treatment option is the use of probiotics. The most direct route to increase the *Lactobacillus* spp. colony in vaginal mucosal tissue is through insertion of encapsulated probiotics, and should result in improved

populations within 3 days.¹⁷⁶ If oral administration is preferred then 10×10^9 colony forming units are recommended, and will require 28–60 days to normalise vaginal colonies.¹⁷⁶ (See Chapter 27 on recurrent urinary tract infections.)

Childbirth

Childbirth is a culmination of between 37 and 42 weeks' gestation, and providing support to women at this important moment in time can prevent unnecessary interventions at later stages. Education and empowerment of women to trust their body and the birth process are paramount before labour begins.¹⁷⁷ This can be achieved successfully through group psychoeducation and support work to release fear surrounding the birth process.¹⁷⁸ It is also important that the woman feels supported by sensitive and nurturing birth companions at the time of birth.¹⁷⁷ Birth companions such as midwives^{179–182} and doulas^{183–186} have been associated with improved birth outcomes for women seeking low-intervention births.

Reducing interventions associated with birth not only benefits the birth experience of the woman if she desires a low-intervention birth, but may also benefit the health of the infant. For example, an induced labour frequently results in a cascade of interventions such as the use of intravenous lines, enforced bed rest, continuous electronic fetal heart monitoring, amniotomy, increased pain and discomfort, epidural analgesia, operative (caesarean) delivery and prolonged hospital stay.¹⁸⁷ Postbirth health risks associated with induction and the potentially resulting caesarean delivery included maternal depression and neonatal respiratory illness,¹⁸⁸ as well as longer term risks to the infant of atopic diseases such as allergic rhinitis,¹⁸⁹ eczema and asthma¹⁹⁰ (see Chapter 25 on inflammatory skin disorders). Interventions such as induction and operative delivery may still be indicated in high risk circumstances, but the importance lies not so much in avoiding the intervention as ensuring women are educated and empowered to feel in control of their birth process.¹⁹¹

Outside of the medical model, there are some low-intervention therapies which may benefit child birth. For example, **acupressure** has been used effectively to reduce pain or delivery time in labour.¹⁹² A case report has also been published promoting the use of homoeopathic **Caulophyllum** in conjunction with nipple stimulation to induce and augment labour,¹⁹³ and a small randomised controlled-trial found that a combination of homoeopathic **Arnica** and **Bellis Perennis** resulted in an apparent reduction in postpartum blood loss.¹⁹⁴ Even less invasive models such as **muscle relaxation techniques** and **lower back massage** have been associated with reduced labour pain.¹⁹⁵

Postnatal support

Lactation

The mammary glands develop during pregnancy, but the levels of progesterone and oestrogen secreted by the placenta prevent lactation occurring until 30–40 hours after birth.¹⁹⁶ Healthy and adequate lactation provides extensive health benefits to infants both at birth and later in life, and promoting efficient suckling and successful breastfeeding begins with timely skin-to-skin contact between mother and infant.¹⁹⁷ Furthermore, promotion of good health practices through preconception and pregnancy education reduces the risk of breastfeeding complications.¹⁹⁸ In contrast, delayed contact between mother and infant, washing the mother or infant prior to contact or the use of a pacifier before 6 weeks of age have all been shown to interfere with effective and successful breastfeeding.¹⁹⁷

A number of **herbs** have been used traditionally to encourage lactation: *Trigonella foenum-graecum*, *Galega officinalis*, *Foeniculum vulgare*, *Pimpinella anisum*, *Cnicus benedictus*, *Silybum marianum*, *Asparagus racemosus* and *Urtica dioica*.^{199,200}

Unfortunately, recent research into the efficacy and physiological activity of these herbs is scarce. Based on experimental data, increased milk production can generally be expected 24–72 hours after consumption of *F. vulgare*,²⁰¹ and *A. racemosus*'s traditional Ayurvedic use as a galactagogue has also been confirmed in a clinical trial.²⁰²

Formula feeding

There is an undeniable weight of evidence that ‘breast is best’, although in some instances breastfeeding may not be an option. Formula supplementation may also be required in the nutritionally compromised mother.

Soy proteins have been used as an alternative protein source for infants with allergies or food intolerances, although there is little evidence to support their use. A Cochrane review of five studies found only one study comparing soy to cow's milk formula noted a reduction in childhood allergy, asthma and allergic rhinitis.²⁰³ The other four studies that fit the inclusion criteria reported no significant benefit for any allergy or food intolerance. Many infants allergic to cow's milk may also be allergic to soy milk,²⁰⁴ suggesting a deeper underlying immunological issue. Furthermore, intestinal permeability is higher in infants fed formula than those fed breast milk;²⁰⁵ this may contribute to the risk of the development of atopic disease (see Chapter 25 on inflammatory skin disorders). In these circumstances, **colostrum** supplementation in the initial feeding of formula-fed infants may offer some protection.²⁰⁶

No formula will ever be able to replicate the comprehensive and complex nutritional profile of human breast milk. In addition, any nutritional deficiencies will be compounded by exclusive use of one formula. Therefore several specific formulas should be rotated regularly to ensure that the effects of possible deficiencies are minimised.

Postnatal depression

Some women develop a severe depression after childbirth. Sleep deprivation and general tiredness may worsen these symptoms.^{207,208} Recent research has also acknowledged that in 50% of couples, if women are depressed, their partners are depressed also.²⁰⁹ Unfortunately, current family health systems do not effectively balance the postnatal support to both members of the parenting team.²⁰⁹ If either partner is experiencing fatigue, promoting adequate sleep is important and may simply require sleeping when the baby sleeps. If there is difficulty sleeping during these odd hours, sleeping aids may be considered (see Chapter 14 on insomnia). **Omega-3 essential fatty acids** are also indicated in general postnatal depression (see Chapter 12 on depression). Other underlying issues, particularly those associated with the development of menstrual disorders, should be investigated, as women with a history of postnatal depression are more likely to develop menstrual difficulties and perimenstrual symptoms when menstruation recommences.²¹⁰

INTEGRATIVE MEDICAL CONSIDERATIONS

Traditional Chinese medicine

Acupuncture on the day of embryo transfer is demonstrated to have a beneficial effect on live births.¹³⁰ Acupuncture has been demonstrated to be a safe and effective treatment tool for pelvic and back pain associated with pregnancy.²¹³ Similarly, acupressure, a less invasive therapy similar to acupuncture, has been associated with

Table 31.6 Review of the major evidence

INTERVENTION	METHODOLOGY	RESULT	COMMENT
Multivitamins	Prospective cohort study (Nurses Health Study II) ⁹⁵	Inverse association between multivitamin use and ovulatory infertility	116,671 female registered nurses enrolled in study and followed every 2 years with questionnaire.
Antioxidants	Self-reported retrospective food-frequency questionnaire ¹¹¹	High intake of antioxidants was associated with better semen quality (sperm concentration, motility and progressive motility) than low or moderate intake.	97 healthy male volunteers with at least 15 men from each age decade from 20 to 60 years of age. Volunteers completed Modified Block Food Frequency Questionnaire and semen sample for analysis.
Diet	Prospective cohort study ⁵²	Increased intake of <i>trans</i> -unsaturated fats associated with increased risk of ovulatory infertility after adjustment for known and suspected risk factors for this condition.	18,555 married, premenopausal women without history of infertility who attempted a pregnancy or became pregnant over an 8-year period. Diet assessed twice during follow-up using food-frequency questionnaire.
Arginine	RCT (<i>n</i> = 34) of women undergoing assisted reproduction were treated with standard treatment plus placebo (<i>n</i> = 17) or standard treatment with oral L-arginine supplementation (<i>n</i> = 17) ¹³¹	Arginine supplementation in poor responder patients improved ovarian response, endometrial receptivity and pregnancy rate (3/17 vs 0/17) (all <i>p</i> ≤ 0.05).	No dose of L-arginine supplied. Success rates in pregnancy still low and all successful pregnancies still resulted in early pregnancy loss.
Smoking	Retrospective cohort study via questionnaire ⁸	Cigarette smoking adversely affected fertility in both males and females.	Ontario Farm Family Health Study; 1898 couples with 2607 planned pregnancies conducted over 30 years.
	Population study via questionnaire ⁹	Both active and passive smoking in women associated with delayed conception OR of 1.54 (95% CI 1.19–2.01) delayed conception > 12 months women who smoked compared to non-smokers; OR 1.14 (95% CI 0.92–1.42) for passive smokers). Heavy smoking in men independently associated with delayed conception. In active smokers, effect increased with number of cigarettes smoked.	All couples (14,893 pregnant women) expected to deliver in Avon Health Authority area, UK, between April 1991 and Dec 1992. Main outcome measure: time taken to conceive.

(Continued)

Table 31.6 Review of the major evidence (*Continued*)

INTERVENTION	METHODOLOGY	RESULT	COMMENT
Body weight	Prospective cohort study (Nurses Health Study II) ⁵³	U-shaped association between body mass index (BMI) and relative risk of ovulatory infertility. Increased risk for BMI below 20.0 and above 24.0 kg/m ² .	Prospective data collected for 116,671 female registered nurses aged 25–42 years at cohort's inception; 830 cases of incident anovulatory infertility and 26,125 pregnancies.
Exercise	Prospective cohort study (Nurses Health Study II) ⁵³	Increase in vigorous physical activity associated with 7% (95% CI = 4–10%) lower relative risk of ovulatory infertility and a 5% (95% CI = 2–8%) reduction in relative risk per hour of weekly activity after adjustment for BMI.	Prospective data collected for 116,671 female registered nurses aged 25–42 years at cohort's inception; 830 cases of incident anovulatory infertility and 26,125 pregnancies.
Zinc	RCT (<i>n</i> = 45) men with asthenozoospermia were randomised to zinc only (<i>n</i> = 11), zinc + vitamin E (<i>n</i> = 2), zinc + vitamins E + C (<i>n</i> = 14), placebo (<i>n</i> = 8) for 3 months. ²¹¹	All intervention groups had improved sperm parameters compared with placebo. There was also a measured reduction in oxidative stress, apoptosis and sperm DNA fragmentation in intervention groups.	The sample size of this study is quite small.
Selenium and n-acetyl cysteine	RCT (<i>n</i> = 468) men with idiopathic asthenoterato-spermia were randomised to selenium 200 µg (<i>n</i> = 116), 600 µg NAC (<i>n</i> = 118), combination (<i>n</i> = 116), or placebo (<i>n</i> = 118) for 26 weeks followed by 30 week washout. ²¹²	Following treatment, FSH decreased and testosterone increased. Semen parameters significantly increased. The strongest correlation was noted between the combination therapy and mean sperm concentration, sperm motility and percentage normal morphology.	This is a well-constructed study, although baseline measurement of selenium and/or oxidative stress would have allowed for a more meaningful interpretation of results. However, the dosage used was within a therapeutic range and reflective of dosages used in clinical practice.

reduced pain and shorter delivery time in labour.¹⁹² Moxibustion is a method used in traditional Chinese medicine as a method for cephalic version of breech babies;²¹⁴ however, due to methodological issues randomised controlled trials have not been completed.²¹⁵

Antenatal classes

Antenatal classes can provide appropriate supervision and advice on antenatal exercises, back care, labour pain relief, relaxation skills and posture. An observational study involving 9004 women found that women who attended antenatal classes had a much lower risk of caesarean section and were half as likely to bottle feed in hospital, as well as being more satisfied with the experience of childbirth.²¹⁶ Furthermore, group psycho-education classes, which focus on releasing the fear surrounding the birth process, can improve a woman's pain tolerance and coping mechanisms in childbirth.¹⁷⁸ Similarly,

fathers attending antenatal classes felt they were more prepared for the birth and for their role as a support person.²¹⁷

Homoeopathy

Individualised homoeopathic treatment in 45 subfertile men was found to improve semen parameters (sperm count and motility in addition to general health parameters) equal to conventional treatment.²¹⁸ *Caulophyllum* is a commonly used homoeopathic remedy for third trimester cervical ripening and induction of labour. A Cochrane review²¹⁹ evaluating this remedy identified two trials involving 133 women, but the results of the review were inconclusive due to a lack of information about the methodology used in the studies. Although a lower level of evidence, a case report has also been published promoting the use of this remedy.¹⁹³

Aromatherapy

A pilot randomised-controlled feasibility study which took an individualised approach to the prescription of aromatherapy oils in childbirth found that the intervention group rated a lower pain perception, and a higher proportion of the control group had their infants transferred to the neonatal intensive care unit.²²⁰



Case Study

A 35-year-old female presents to the clinic, **wanting to fall pregnant**. She was diagnosed with **polycystic ovarian disease** 5 months ago, and unintentionally became pregnant 1 week later. She **miscarried** this pregnancy at 5 weeks. She and her partner have since been actively trying to conceive for 2–3 months. Her **BMI is 28.4**, and her **umbilical:hip ratio is 0.8**. Her **menstrual cycle is irregular**, and can vary between 26 and 47 day cycles. She also experiences **breast tenderness** and **depression premenstrually**. Her **libido has been diminished** and she has not menstruated since the miscarriage. She is feeling quite anxious about conceiving and is waking 4–5 times per night.

SUGGESTIVE SYMPTOMS

- PCOD
- Elevated BMI
- Elevated umbilical:hip ratio
- Premenstrual symptoms
- Irregular menstrual cycle
- History of miscarriage
- Anxiety about fertility

Example treatment

The initial treatment for this case focused on supporting her nervous system and reproductive hormones, while further exploring her glucose tolerance. Due to the effects of physiological responses to stress on the reproductive hormones, anxiolytic, sedative and antidepressant herbs, such as *Matricaria recutita*, *Hypericum perforatum*, *Melissa officinalis* and *Verbena officinalis* were included in the formula.²⁰⁰ *Asparagus racemosus* was also included as a general nervine tonic, and for its capacity to support libido and conception.²²¹ The nervous system was also supported by the use of an individualised flower essence formula. (Note: Although popular in pregnancy and preconception, energetic medicines often require further evidentiary support.) The effect of her polycystic ovarian disease on potential fertility and capacity to carry to term was also acknowledged. She had already begun to modify her diet following the diagnosis 5 months ago, and reduced her dietary carbohydrate intake, with a focus on low glycaemic load carbohydrates, prior to her first appointment. It was recommended that, to support these changes, she resume regular exercise and aim

for 20–30 minutes, three or four times per week. She had also begun weekly acupuncture treatment following the miscarriage, and was encouraged to continue. Prior to more aggressive treatment of her insulin sensitivity, a glucose-insulin tolerance test (GITT) was ordered. It was also recommended for her partner to join her for the next consultation.

Expected outcomes and follow-up treatments

Following this treatment, the next intended step would focus on more specific treatment of glucose metabolism, depending on the outcomes of the GITT. Depending upon the regularity of her menstrual cycle, *Vitex agnus-castus* would also be incorporated into her treatment plan. In this case, upon her return consultation, she was already 4.5 weeks pregnant. With this in mind, her liquid herbal formula was replaced with infusions of *Matricaria recutita* three times daily, and she was counselled to focus on maintaining a positive mindset.

The journey to conception for couples having difficulty can be quite tumultuous and unpredictable. It is important to have a plan in mind and encourage couples to allow sufficient time for good foundations to be laid before conceiving. However, this also needs to be tempered with the often-present impatience expressed by couples who have ‘tried everything’ prior to their first naturopathic consultation. Furthermore, naturopaths also need to be flexible with their treatment plan and be prepared to cancel intended treatment protocols and compromise certain stages in preconception care if this does not fit in with the timeline of the couple, or alternatively if the couple unexpectedly fall pregnant outside of the intended plan. Either way, it is important that the naturopath value and appreciate the powerful role counselling and dietary and lifestyle changes can have on conception and pregnancy outcomes, rather than placing all of their focus on supplements and other such interventions.

Herbal formula

<i>Matricaria recutita</i> 1:2	20 mL
<i>Hypericum perforatum</i> 1:2	15 mL
<i>Melissa officinalis</i> 1:2	15 mL
<i>Verbena officinalis</i> 1:2	20 mL
<i>Asparagus racemosus</i> 1:2	30 mL
Dosage: 10 mL twice daily	100 mL

Nutritional prescription

Pregnancy multivitamin
Dosage: 1 tablet daily

Flower essences

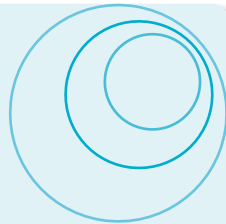
Dog rose of the wild forces, fringed violet, peach-flower tea tree, red Suva frangipani, she oak, Sturt desert pea, sunshine wattle

Lifestyle prescription

Exercise for 20–30 minutes 3–4 times per week
Glucose tolerance test via glucose-insulin tolerance test

KEY POINTS

- Mothers should be reassured that pregnancy is a normal part of life and normal activities should be continued.
- Infertility or subfertility is rarely just a female issue. A coordinated approach involving both partners is necessary.
- There is no ‘one-size-fits all’ approach to preconception or pregnancy care, and an individualised approach is required.
- The treatment goal is the restoration of good health as often as it is treating infertility—in most cases a healthy body is a fertile body.
- Pregnancy is not a disease condition to be treated, but rather a natural process that needs to be supported.



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