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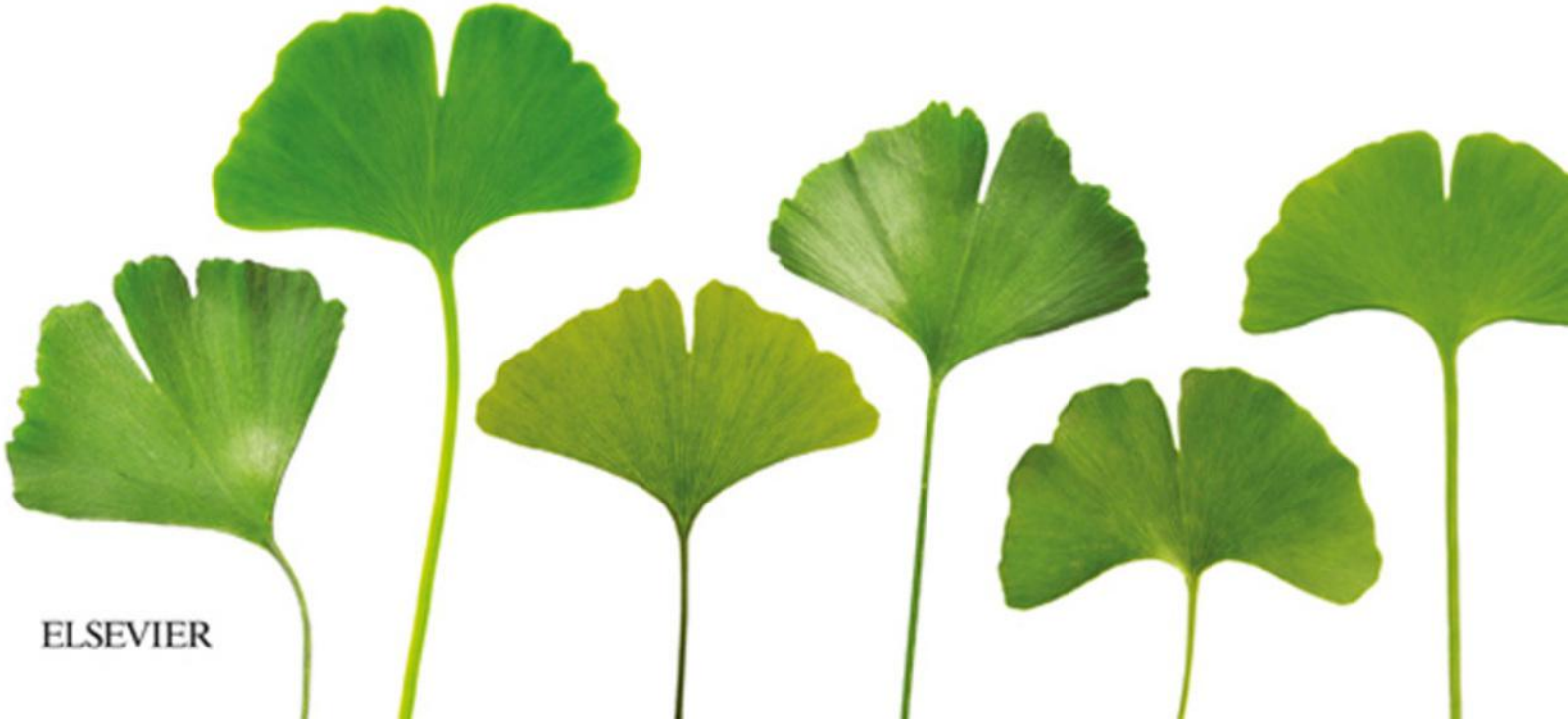
CLINICAL NATUROPATHIC MEDICINE

Leah Hechtman

SECOND EDITION



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SECOND EDITION

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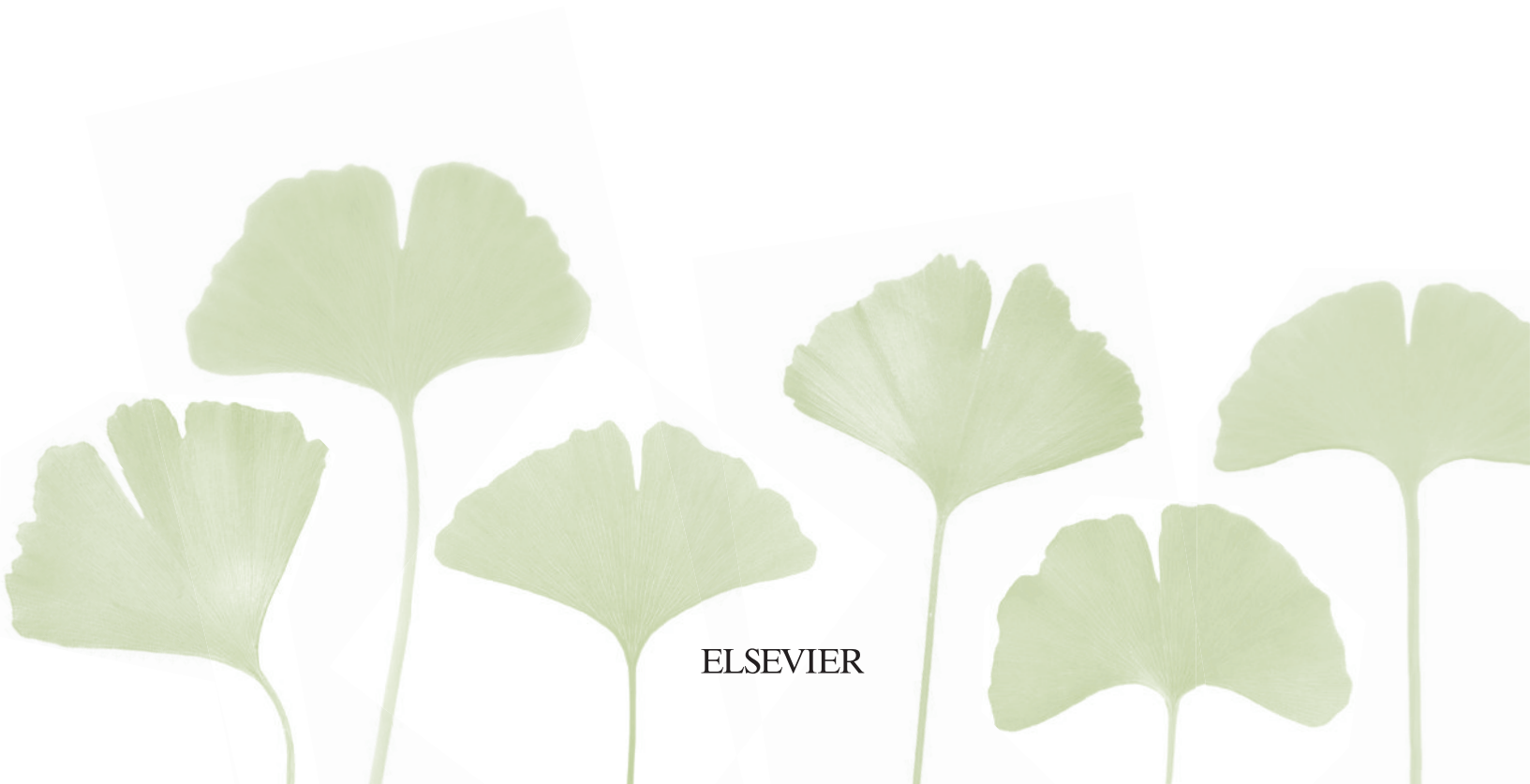

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Foreword

One of the greatest problems limiting the reemergence of naturopathic medicine has been the lack of modern textbooks, especially those based on science. When I was a student back in the early 1970s, the most current textbook in the US had been published the year I was born!

For almost a century, the mantra of conventional medicine and its apologists had been that naturopathic medicine is not only not scientific but misguided, giving patients 'false hope' at best and delaying needed medical intervention at worst. I still remember a debate I had with an MD while I was working as a research associate at a medical school before I decided to enter naturopathic school. I had become a vegetarian and noticed many changes in my body and health. I asked one of my fellow researchers what these changes meant and was told, 'These are errors in your observations; diet does not affect you'! This may sound unbelievable today, but remember this was the doctrine of conventional medicine until recently. The problem for me in the debate, however, was that as a pre-professional I was not aware of research to refute him, only my personal experience. Shortly thereafter, I learned from the woman who married my roommate from college that her juvenile rheumatoid arthritis had been cured. This was quite a surprise to me as I was happily working with MDs and PhDs to find a cure for this incurable disease. When I asked how this happened, her response was that she had seen a naturopathic doctor. 'What is that?' I wondered. I had the opportunity to meet him and ask what he did for my friend. His answer: 'I taught her how to eat properly and detoxified her liver.' This was quite intriguing and a totally different way of thinking about health and disease. I then asked the ND the same question I had asked the MD. He took Guyton's *Medical Physiology* — then a standard textbook for medical schools — off his bookshelf and showed me what was happening to my body as I changed my diet. I was very impressed that the naturopath knew physiology better than the MDs/PhDs I was working with in medical research. I then asked him if I could spend a few days with him watching him see patients. After seeing 'incurable' after 'incurable' patient get better with his expert care, I was convinced that there was something special here. Clearly diet and natural therapies — though discounted by conventional medicine — were indeed effective. But when I asked him for research supporting his therapies or modern books on naturopathic medicine to read, he had nothing to offer.

Happily, this problem is now being substantively addressed.

The first modern textbook of naturopathic medicine was co-authored in 1985 by Michael Murray, ND and me, the *Textbook of Natural Medicine* — breaking an almost four-decade hiatus. Now in its 5th edition, the *Textbook*'s major contribution was beginning the documentation of the research support for natural medicine. The 2200-page text cites over 12 000 references to the peer-reviewed scientific literature documenting the efficacy of natural therapies. Another important contribution was that we brought together for the first time multiple naturopaths as the experts for a scholarly publication. And finally, we developed and documented protocols for the use of natural therapies to promote health, prevent disease and even reverse a wide range of diseases. Unfortunately, it had for far too long been the lone standard for the profession. Finally, this changed with the emergence of Hechtman's excellent *Clinical Naturopathic Medicine*. The first edition provided great detailed guidance on how to practise natural medicine. This second edition provides a welcome update and advancement in depth and breadth.

The major contribution of *Clinical Naturopathic Medicine* that differentiates it from *Textbook of Natural Medicine* is that it is unabashedly focused entirely on the practice of naturopathic medicine. Hechtman and her colleagues expertly look at the historic origins of naturopathic concepts and therapies then integrate these with scientific research to provide a strong foundation for modern clinical naturopathy. While there is plenty of science, I especially appreciate how the authors carefully considered traditional naturopathic approaches and therapies in the context of modern science to provide students and practitioners with guidance on how to think about and treat patients. This is a key strength of *Clinical Naturopathic Medicine*: practical guidance and how to think about patients.

As appropriate, almost every chapter covers not only what to do, but also how to do it and how to optimise for the uniqueness of each patient. Nutrient dosages, herbal combinations, potential adverse interactions with conventional drugs, laboratory tests and clinical criteria identifying patient characteristics that require modification of the intervention, etc. are all covered. Truly, a remarkable compilation of how to practise naturopathic medicine conscientiously, effectively and safely.

Another very interesting aspect of *Clinical Naturopathic Medicine* is that it is systems, rather than disease, oriented. This means that most of the content is oriented towards physiological systems and what goes wrong rather than the disease the person has and how to treat it. While there is plenty of guidance on how to treat diseases, there is far more attention to understanding the function of the system, why it goes wrong and what to do about it.

Included also is some very sophisticated guidance on understanding the adverse effects of the drugs used by conventional medicine for each disease and how to mitigate their effects without impairing their efficacy. This later guidance is extremely important as few realise the prevalence of adverse drug reactions. Research has shown that 25 of patients suffer an adverse event as a result of medical care.[1] Worse, in the US adverse reactions to **properly prescribed** drugs is the fourth leading cause of death.[2] And for the elderly (over age 60!), the numbers are alarming: one in ten hospital admissions are due to adverse drug reactions.[3] Fortunately, many of these adverse events can be prevented by the expert use of natural therapies — as fully described in *Clinical Naturopathic Medicine*. We clearly need conventional medicine: it has many almost miraculous successes which benefit all. However, it is an incomplete system and is very well balanced by naturopathic medicine. We need to stop using the term 'alternative' and instead focus on 'collaborative' medicine. For the benefit of our patients, we need to integrate the best of natural and conventional medicine.

I am extremely impressed with this work and wish it had been available when I was a student. Conscientious clinicians will use the great resource every day. Congratulations Leah Hechtman, ND and her skilled colleagues. This outstanding textbook will have a profound impact on improving the clinical quality and efficacy of our profession.

Joseph Pizzorno ND
Editor-in-Chief, *Integrative Medicine, a Clinician's Journal*
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Contents

CHAPTER APPENDICES

Preface

As we release the second edition of this text, it is a perfect opportunity to reflect on the growth and change in naturopathy since the first edition.

The practice of naturopathy worldwide has continued to achieve greater recognition and acceptance in the wider medical communities. Improved research pathways, educational opportunities and greater evidence for our practice mean the profession continues to evolve positively. This in turn ensures that people are receiving the help they need. As naturopaths, we continue to strive for more, to push the limits, to stretch the boundaries. We continue to help people in need with a form of medicine that supports the body's innate ability to heal itself.

The intention to help others is undoubtedly the primary driver in our profession as evidenced by our standards of patient care. Naturopathic clinicians strive to find the cause of a patient's complaint. We seek to empower people through education and we choose to support them in their health concerns with the gentlest, yet most effective treatments available. We know what we do works. We are simply supporting the development of our time-tested treatments with research and modern medical practices.

We need to continue to take on more responsibility for the welfare of our patients as we strive for healthcare excellence. We need to validate and translate our practice into the language of modern medicine to enable greater access to more individuals who dearly need our care.

We need to share our knowledge and historical wisdom; formulate and share our strategies and work together to push forward. If we truly want to be at the table of modern healthcare, we cannot hide away and shield our methods. As naturopaths, we offer a unique perspective of healthcare and provide significant support and relief for patients. Our treatments encourage self-responsibility and involvement in the healing process.

The structure of this text was crucial to the design of the project. It was important that the content is easily accessible, logical and articulate. The textbook has been divided into three parts: Part 1 — Principles of naturopathic medicine — providing an overview to our main treatment approaches; Part 2 — Naturopathic treatments — giving a specific overview of the two main treatments, nutrition and herbal medicine; and Part 3 — Body systems — detailing each system of the body and relevant major conditions. There are also appendices relevant for the student and the clinician, both in the book and online at Expert Consult. This text is accompanied by a second volume of advanced principles, topics and conditions.

Each component of this book has been arranged in a systematic manner: each chapter pertains to a specific system of the body or unique topic; and each condition is organised according to pedagogy that ensures the content is comprehensively and systematically covered. Within each condition, the reader can view the content in overview for quick access or as a detailed discussion that may provoke critical thought, reflection and consideration. The traditional approach to the topic has been incorporated and integrated into the carefully researched content that follows. Each reference was included not solely because it supported a statement, but because it ensured that the content delivered was sound and accurate. At the conclusion of each condition, the reader is provided with a comprehensive case study. This ensures that each contributor's unique clinical perspective enriches the content and translates the theory into realistic clinical practice.

At the heart of naturopathy, we must lean on our elders whose traditional system demonstrated that the essence of our treatment relies on the relationship between the patient and the clinician. Evidence-based medicine forms a component of our system of knowledge. It provides us with a lens to explain the efficacy of our treatment but can never replace the healing relationship. The relationship between clinician and patient continues to be the greatest teacher for growth and understanding and ultimately the platform for change and healing.

Leah Hechtman
July 2018

About the author

Leah Hechtman is an experienced and respected clinician who specialises in fertility, pregnancy and reproductive health for men and women. She is the Director of The Natural Health and Fertility Centre in Sydney, Australia.

She has completed extensive advanced training and is a university lecturer, keynote speaker, author, contributor to various professional texts and journals, and educator to her peers.

Leah is currently completing her PhD through the University of New South Wales, Faculty of Medicine, School of Women's and Children's Health, Sydney, Australia.

She holds memberships and fellowship status with numerous groups and organisations in naturopathy and the wider medical and fertility communities.

Leah leads by example, remembering to live life to the fullest and believes that ill health is merely a stepping stone to help you reclaim your true state of being.

Acknowledgments

As we conclude working on the second edition, I reflect on the journey myself and my co-contributors have taken. We have had our share of loss, birth, personal challenge and prosperity. Sadly, two of the contributors from the first edition have passed away — Dr Tini Gruner and David Kirk. Two individuals whose passion for our profession was clearly evident. Their contributions remain in the text and have been respectfully updated. They both contributed to our profession significantly and are greatly missed.

It has been an honour and a privilege to work again with some of the first edition's contributors and to meet and work with some wonderful new individuals. I am deeply humbled and inspired by what has been possible and what we have collectively achieved. A book of this magnitude is near impossible without the support, dedication and commitment of everyone involved in the project.

In the order of their contribution, my appreciation to Dr Kate Broderick, Dr Sue Evans, Rachel Arthur, Annalies Corse, Michael Colenso, Liesl Blott, Gabrielle Covino, Lisa Costa Bir, Justin Sinclair, Jane Frawley, Emily Bradley, Susan Hunter, Dr Ses Salmond, Dr Janet Schloss, Kathy Harris, Dr Karen Bridgman, Annmarie Cannone, Dr Bradley McEwen, Dr Matthew Leach, Teresa Mitchell-Paterson, Daniel Robson, Ian Breakspear, Cheryl le Roux, Dr Erica McIntyre and Dr Kate Worsfold.

A special note of gratitude goes to Liesl Blott for her contribution of both Chapter 6 and each of the interaction tables within each system. Additionally, much gratitude to Lisa Costa Bir for Chapter 8 and her expertise provided for the dietary plans within each condition.

I have learnt much from working with you all. Your dedication to the project and commitment to sharing your knowledge and improving the education standards of our profession have been inspiring. Additionally, my deepest gratitude to Dr Joseph Pizzorno. Joe, it is again a privilege to include your foreword and have you involved once more.

My sincere appreciation goes to the team at Elsevier. The second edition certainly took longer than anyone planned. As we ploughed through the project the integrity of those involved was highly evident and I am most appreciative of their respective kindness, commitment and dedication to producing the best possible text. Much gratitude to Larissa Norrie, Vanessa Ridehalgh, Rochelle Deighton and others.

Thank you to Cheryl le Roux for your dedication and commitment to the project as my research assistant. You provided much support to get through what was needed and your skill and knowledge are highly evident. I know I will see much success for you in the future.

To my colleagues at UNSW — my supervisors, study collaborators and clinicians, and fellow researchers — you have provided me with growth, opportunity and challenge. You have helped me to expand and develop as a researcher and this has supported me to develop in ways I am truly grateful for.

To my fellow clinicians and colleagues, past lecturers, teachers and mentors — you each hold a place in my development, have provided me with inspiration and guidance and have helped me become the person and clinician that I am today. Thank you.

To all herbalists and naturopaths — both past and present — we share this journey together. The more we collaborate and support each other, the more we can achieve collectively and contribute to the greater good for all.

Special thanks to my family and friends. Your love, patience and understanding have given me much support to achieve and contribute to the betterment of others.

Finally, my gratitude to each patient I have ever worked with or will work with. It is the unanswerable and the mysterious that propels me as I yearn to understand and discover the answers. Each patient is my greatest teacher. Each story, each journey, each experience my master class. Each person reminds me to respect the innate healing ability of the body, the wisdom and gifts from nature, and the tenderness and humility of the human spirit.

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PART 1

Principles of naturopathic medicine

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1

Naturopathic philosophy

Kate Broderick

INTRODUCTION

Naturopathic medicine is categorised as a 'whole medical system'. Whole medical systems are 'complete systems of theory and practice that have evolved independently over time in different cultures and apart from conventional medicine or Western medicine.'[1] Perhaps the greatest part of this categorisation is attributable to the comprehensive and seamless philosophical basis of naturopathic medicine and the closely aligned clinical theory and practice that flow from that philosophy. The foundation of naturopathic philosophy and clinical theory as the basis of practice can be compared to that of Eastern whole medical systems such as traditional Chinese medicine or Ayurveda, as well as to other Western whole medical systems such as homeopathy, though certainly naturopathic medicine is the youngest of these systems.

The evolution of naturopathic medicine since its establishment as a profession just over 100 years ago has run parallel in time to the evolution of modern conventional medicine, and this has resulted in influences that have shaped and galvanised both the naturopathic professional body and the practice of naturopathic medicine. It has been more heavily influenced by modern technological medical advances than by the older whole medical systems, while it has also been challenged to define its philosophy and clinical theory clearly and comprehensively in order to strengthen its identity and its approach to disease and healing.

Origins of naturopathic medicine

The history of naturopathic medicine can be traced back to ancient roots in Greco-Roman medicine, but a full exposition of the ancient period is beyond the scope of this text. This chapter will limit itself to a concise overview of the more immediate history of the profession, from the mid-1800s hydrotherapy and nature cure movements in Europe to the first two decades of professional formation in 20th century America. This will provide a basis for understanding the roots of modern naturopathic philosophy and clinical theory.

EUROPEAN HYDROTHERAPY AND NATURE CURE

While there are a number of key players in the development of the European hydrotherapy and nature cure movements, the two most influential figures were Vincenz Priessnitz (1799–1851) and Father Sebastian Kneipp (1821–97). Their pioneering work in hydrotherapy was the subject of provincial rivalry and unrelenting professional jealousy from the medical community yet it laid the foundation for the development of a new system of medicine following on their traditions.

Born into a peasant family in Austrian Silesia, Priessnitz received no official medical training. He began treating injuries from local farmyard accidents with cold-water applications, wet bandages and compresses. From these early beginnings Priessnitz experienced overwhelming clinical success as he developed his art of water cure, with Chopin and Napoleon III among those who sought his clinical expertise.[2] His fame soon spread far beyond the confines of Austria and patients from Britain, France, Italy, Turkey, America and Germany soon sought his guidance.[3]

Like Priessnitz, Father Kneipp came from humble beginnings in Bavaria, Germany. Too poor to afford medical help, he cured himself of tuberculosis with cold-water therapy; nightly dips in the icy waters of the Danube were the key to his success.[2] After attending a seminary and becoming a priest, he began to successfully treat the people of his parish using his water cure and herbal medicines. Word of his successful water cure spread, and one of his patients, Benedict Lust, would go on to take Kneipp's water cure across the Atlantic to America, providing the foundation for the creation of a new system of medicine.[2,4] But the formation of this new system would draw from other roots already in America.

THOMSONIANISM, PHYSIOMEDICALISM AND THE ECLECTICS

Samuel Thomson (1769–1843) developed a method of healing that was predominantly based on the use of Native American herbal remedies and sweat baths. His approach was labelled heroic but was considered less harmful than the orthodox medicines being used at the time, which included the use of bleeding, mercury and arsenic. Thomson's simple healing system was based on the concepts of heat and cold; heat was considered life supporting and cold was considered life threatening. Substances that stimulated heat in the body, such as diaphoretics, were considered therapeutic, while substances

that introduced cold into the body, such as mercury, aconite and opium, were avoided.[5]

Thomson had a strong belief in an individual's ability and right to self-treat and firmly believed that the practice of healing should remain with lay people. Underpinning his adamant belief that his system of healing should only be practised by householders was his strong aversion to medical education. He sold franchises to his healing method, which he called 'friendly botanic societies', until the time of his death in 1843.[6]

The physiomedicalist movement was initiated by one of Thomson's assistants in reaction to Thomson's rejection of educational progression. In 1835, Thomson enlisted the support of Alva Curtis, a young and popular practitioner from Ohio who claimed to have lost only one out of 200 patients. Curtis used the position bestowed upon him by Thomson to gather support for his own system of healing and led a breakaway movement in 1838 with the establishment of his *Independent Thomsonian Botanic Society*.[7] In contrast to Thomson's aversion to furthering medical knowledge, Curtis established medical schools to teach and develop his system of healing, which was largely based on the use of herbal medicine.

The physiomedicalist movement also initiated the use of an energetic diagnostic system. Patients in deficient states were regarded as 'asthenic', and those in excess states were regarded as 'sthenic'. Diagnostic procedures such as tongue analysis and pulse diagnosis were also employed so that the most appropriate herbal remedies could be selected.

After initial work by Curtis and Cook, the physiomedicalist movement was further refined by Thurston in 1900 as a:

> *... medical philosophy founded on the Theorem of a vital force or energy, inherent in living matter of tissue-units, whose aggregate expression in health and disease is the functional activities of the organism and whose inherent tendency is integrative and constructive; resistive, eliminative, and reconstructive to inimical invasion, or disease-causations.*[8]

The detailed and comprehensive work of Thurston provided the physiomedicalist movement with a philosophical basis. In his 400-page document, Thurston provided a rational outline of the failure of 'regular' medicine and went on to set out the theorems of physiomedicalism, the principles of the physiomedicalist movement, and a comprehensive manifesto on medical education, medical terminology, body systems, pathology, disease states, symptoms, diagnosis, food, immunity and the role of the physician.

Wooster Beach (1794–1868) established the 'reformed botanic movement', which drew on the professionalism of medicine and the heritage of indigenous herbal medicine and European and American healing traditions.[9] As the numbers of practitioners and the popularity of this new movement increased, Beach's influence diminished, and the practice of this system of healing came to be known as the 'Eclectic' movement, with Beach widely considered to be the founder of Eclectic medicine.[10] This movement allowed practitioners to incorporate treatment modalities of other healing systems into their repertoire. Free to experiment with a range of healing modalities, the numbers of Eclectic practitioners soared. At its peak, Eclecticism claimed over 20 000 practitioners in the United States; these numbers presented serious competition for the practice of orthodox medicine.[11]

Formation of a profession

Naturopathy was formalised as a system of medicine in the United States under the stewardship of Benedict Lust in the early 20th century. As mentioned, Lust was a disciple of Father Kneipp and he formally introduced the practice of Kneipp's hydrotherapy to the United States, opening the Kneipp Water Cure Institute in New York in 1896 at the age of 27.[12] Lust is considered to be the father of naturopathy. Trained in osteopathy and chiropractic, he opened the first health food shop in America and founded massage and chiropractic schools in New York. He also obtained degrees in homeopathy and in Eclectic medicine in 1913 and 1914.[13] Lust purchased the rights to the term 'naturopathy' from Dr John Scheel in 1902.[14,15]

The formation of naturopathy as a profession and a system of medicine was based on European and American nature cure and similar systems described earlier in this section. Lust's overarching perspective was that if something was natural and it worked, then it could be considered part of naturopathy. Lust was a tireless and avid advocate of naturopathy, speaking and writing prolifically to both medical audiences and the lay public. His dedication and that of other early pioneers of naturopathy, as well as the popularity of naturopathy as compared to the orthodox medicine of the early 20th century, resulted in a rapid rise in the profession for the next 40 years.

Perhaps the most comprehensive and well-known text demonstrating the early philosophical foundations of naturopathy is *Nature Cure*, by Dr Henry Lindlahr, first published in 1913.[16] Lindlahr was also a former patient and disciple of Father Kneipp, and was a major figure in the early American naturopathic landscape. *Nature Cure* perhaps went beyond any other contemporary writings to set out a cohesive and comprehensive philosophy and theory for naturopathy, though Lindlahr did not use that term, and this work is still used as a seminal text in the study of modern naturopathic philosophy and clinical theory.

But, despite the prolific writing of these early naturopathic pioneers, the profession went forward for more than half a century without any clear and concise statement of professional identity and without a philosophical or theoretical approach to practice that was documented and widely agreed to by the members of the profession. Political and cultural forces, as well as advancements in conventional medicine, negatively affected the ability of the profession to remain cohesive and the profession in America became almost non-existent by mid-century. A resurgence in the profession that can be correlated to the rise of the counter-culture in the late 1960s and the 1970s, and the political and legal battles that

ensued from that resurgence, provided a galvanising force for organising and regulating the profession. From that came the coalescing of the body of modern naturopathic philosophy and clinical theory that is the subject of the remainder of this chapter.

DEFINING NATUROPATHIC MEDICINE

> *Naturopathic medicine is a distinct method of primary health care — an art, science, philosophy and practice of diagnosis, treatment, and prevention of illness. Naturopath[s] seek to restore and maintain optimum health in their patients by emphasizing nature's inherent self-healing process, the vis medicatrix naturae. This is accomplished through education and the rational use of natural therapeutics.*[17]

The development of naturopathic medicine in America and the political forces it has defended itself against have resulted in America leading the charge to define the profession and its philosophies and clinical approach, with the above definition being a core part of early efforts. However, the philosophy and clinical theory of naturopathic medicine have migrated worldwide with the profession itself and have been adapted to align with different regulatory, educational, political and economic structures wherever it is practised. The philosophy and clinical theory presented in this chapter represent an adaptation that is suitable to the Australian landscape.

An Australian definition of naturopathy was developed in 2000 by the Naturopathy and Nutrition Forum, a working group of naturopathic practitioners and educators at a retreat coordinated by Southern Cross University. This definition, as follows, was subsequently adopted within the Naturopathy National Training Package of 2002:[18]

> *Naturopathy is a distinct method of healing, underpinned by a philosophical perspective which recognises that all living forms possess a self-regulatory, inherent ability for self-healing. This inherent ability, or Vital Force, operates in an intelligent, orderly fashion. Naturopathic approaches to health care are aimed at supporting and enhancing the body's own ability to heal itself.*
>
> *Expressions of health and disease are considered reflections of the dynamic interchange between the physical, mental, social, environmental and spiritual landscape of the individual.*
>
> *Naturopathy is both an art and a science, drawing upon several lines of evidence, which range from qualitative, quantitative, cultural and traditional.*
>
> *Naturopathic practice integrates a number of modalities, principally nutrition, herbal medicine and tactile therapy. These modalities are applied on the basis of specific principles, and within the context of a healing environment which endeavours to empower the individual, motivate and educate them in order to restore, maintain and optimise wellbeing.*

The comprehensiveness of the Australian definition of naturopathy as compared to the more brief US definition, above, is reflective of both the differences in the regulatory and educational frameworks of the two countries and the aims of the two definitions. It also reflects the fact that the brief US definition is part of a larger document that includes a longer definition, in addition to the six principles of naturopathic medicine, each of which is discussed in the next section. The key commonality of the two definitions is the concept of the healing power of nature, which is one of the primary distinguishing philosophical underpinnings of naturopathic medicine.

Concepts of health and disease

The preamble to the Constitution of the World Health Organization as adopted by the International Health Conference in 1946 defines 'health' as 'a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.'[19] This definition has not been amended since. In taking a holistic view of health and wellbeing, it is in complete alignment with the naturopathic approach to disease and healing.

Whereas the conventional model of diagnosis and treatment of disease approaches disease as a discrete entity that can be identified and eliminated through application of drugs or surgery, the naturopathic model approaches disease from a baseline presumption of health as the natural state of being. Naturopathic treatment seeks to restore health by removing the causes of disease or illness.[20] A concise summary of the naturopathic model for restoration of health is shown in Fig. 1.1. This model gives us a preview of the principles of naturopathic medicine and the other important frameworks of naturopathic clinical theory detailed below.

1. Universe is ordered, intelligent, wise and benign
2. Health is a constant and natural state of being
3. Ill health is an adaptive response to disturbance in organism
4. Removal of disturbing factors will result in potential return of normal health
5. Intervention should involve least force necessary to stimulate self-healing mechanisms

FIGURE 1.1 Naturopathic model for restoration of health

Zeff J, Snider P. Course syllabus: NM5131, Naturopathic clinical theory. Seattle: Bastyr University; 1997–2005. Used with permission of Jared Zeff.

Relevance of philosophy and clinical theory to naturopathic practice

The existence of a unified philosophy and clinical theory to underpin naturopathic practice is not only vitally important to the definition of the profession for regulatory bodies and

the general public, but also critical to guide both the education of future naturopaths and the foundational approach of the practice of naturopathic medicine. As with any healing system, the view of a practising naturopath regarding what naturopathic medicine is will guide and shape what they do in the consulting room, how they justify what they do, and what they expect the outcomes to be. It is the lens through which all patients can be viewed to guide diagnosis and treatment or preventive care. Naturopathic philosophy and clinical theory serve as guideposts for the collective of a highly eclectic profession — they are the glue that holds the profession together — as well as serving to distinguish naturopathic medicine from other systems of natural therapeutics.

And importantly, a cohesive philosophy and clinical theory creates a foundation for thinking deeply about what we do and why we do it. It guards against the loss of individualisation of patient care and the movement of naturopathic medicine towards short cuts, protocols, loss of connection to our traditions, and the replacement of meaningful restoration of health with long-term reliance on symptom-based interventions.

PRINCIPLES OF NATUROPATHIC MEDICINE

There are six commonly recognised principles of naturopathic medicine, which provide the philosophical underpinnings out of which grow naturopathic clinical theory and practice. These six principles are the foundations for how naturopaths approach patient care. They are summarised in Fig. 1.2.

1. *Vis Medicatrix Naturae:* The Healing Power of Nature
2. *Primum Non Nocere:* First Do No Harm
3. *Tolle Totum:* Treat the Whole Person
4. *Tolle Causam:* Treat the Cause
5. *Docere:* Naturopath as Teacher
6. *Preventare:* Prevention

FIGURE 1.2 Six principles of naturopathic medicine

Vis Medicatrix Naturae (The Healing Power of Nature)

> *The healing power of nature is the inherent self-organizing and healing process of living systems which establishes, maintains and restores health. Naturopathic medicine recognizes this healing process to be ordered and intelligent. It is the naturopath['s] role to support, facilitate and augment this process by identifying and removing obstacles to health and recovery, and by supporting the creation of a healthy internal and external environment.*[17]

This principle is the key commonality between the US and Australian definitions of naturopathic medicine and naturopathy (see above), though the Australian definition uses the term 'vital force' to name this principle. It is the first principle of naturopathic medicine because it defines the major distinguishing philosophy of the naturopathic approach to healing, as compared to conventional or other medicines. As the cornerstone of naturopathic practice, it highlights the nature of the organism to operate according to an intelligent and ordered process and it also underscores the naturopath's reliance on this intelligence to bring the organism back to health when the correct internal and external environments are provided.

The recognition of a 'life force' that is distinguished from the known laws of nature or the material sciences is common to the whole medical systems. These systems all carry a presumption that some form of energetic force provides the catalyst for life and for the capacity of the human organism to heal. The concept is described in ancient healing systems of both the East and West, some of which are still in practice today: Hippocrates named this force the *physis*, Galen named it the *pneuma*, Paracelsus dubbed it 'the inner alchemist' or *archeus*, in Ayurveda and yoga it is *prana*, and in Chinese medicine it is *qi/chi*. Across all of these systems of thought the concept of the vital force is defined somewhat differently. For example, in Chinese medicine, in the concept of *qi*, there is no distinction between matter and energy — both are comprised of *qi*.[21] However, the core concept of this force being what enlivens the organism and guides it back to health from illness is shared across the systems.

As with these historical systems, the concept of the vital force was established as a core philosophy in naturopathic medicine at a time when the material sciences were much less advanced than they are at present. Thus, much of what might have been considered vitalistic in historical naturopathic practice can now be explained in materialistic/mechanistic terms, via the laws of chemistry and physics. And it is possible that at some time in the future, with the growing understanding of quantum physics, all aspects of what we refer to as the *Vis Medicatrix Naturae* will be explained in mechanistic terms. Certainly, in the fields of nutritional research and pharmacognosy (the study of medicinal drugs of natural origin, i.e. from plants or other natural sources), much of what a naturopath does can already be explained via modern scientific mechanisms of action. However, that does not negate the fact that, absent a full scientific exposition of the nature of the energetics and consciousness of human and other organisms, the concepts of *qi*, *prana* or vital force and the knowledge of how to support or encourage their movement via traditional therapeutics have great utility in the establishment and maintenance of human health.

The principle of the *Vis Medicatrix Naturae* aims to guide the naturopath to work with, rather than against, nature. As an important part of this aim, the naturopath's view of the symptoms of illness is framed

in the context of the body's own innate natural healing mechanisms:

> *Rather than viewing the ill patient as suffering from a 'disease,' the naturopath views the ill person as functioning within a process of disturbance and recovery in the context of nature and natural systems ... Disease is the process whereby the intelligent body reacts to disturbing elements. It employs such processes as inflammation and fever to help restore its health.*[20]

Thus, the *Vis Medicatrix Naturae* is a 'self-organising and healing process', and disease is seen as something caused by disturbance of that process and the body's attempt to recover from that disturbance. Symptoms of acute disease, such as fever and acute inflammation, are seen as tools that the body uses to bring itself back to health — they are self-healing processes that express the *Vis Medicatrix Naturae* and enable the possibility of a complete cure. Suppressing those processes poses an obstacle to cure. Of course, in some instances, it can be necessary to suppress severe symptoms. This is discussed further in the section on the therapeutic order below.

There is a common variant in the discussion of the *Vis Medicatrix Naturae* that should be addressed: the *Vis Medicatrix Naturae* is often equated to 'vitality', which is somewhat of a sidestep from the principle. Certainly, the level of a person's vitality is something in which a naturopath is keenly interested. The level of vitality tells us what type of response a person may or may not mount to a treatment intervention and what level of intervention is best called for in a given case; that is, lower force vs higher force, among other things. However, the level of a person's vitality is not the same as the *Vis Medicatrix Naturae*. The *Vis Medicatrix Naturae* is the intelligence and order in natural processes, the tendency towards balance and health, whereas vitality can be considered as the power behind or within this intelligence. Perhaps the easiest way to distinguish these concepts is by analogy. If the *Vis Medicatrix Naturae* is very simplistically equated to the blueprint for an engine, then vitality can be equated to the fuel for the engine. The blueprint is always there, the level of the fuel can be higher or lower.[22]

Primum Non Nocere (First Do No Harm)

> *Naturopath[s] follow three precepts to avoid harming the patient:*
>
> *Naturopath[s] utilize methods and medicinal substances that minimize the risk of harmful effects, and apply the least possible force or intervention necessary to diagnose illness and restore health.*
>
> *Whenever possible the suppression of symptoms is avoided as suppression generally interferes with the healing process.*
>
> *Naturopath[s] respect and work with the Vis Medicatrix Naturae in diagnosis, treatment and counseling, for if this self-healing process is not respected the patient may be harmed.*[17]

This principle is familiar from its roots in Hippocratic medicine, and on the surface has commonality to the Hippocratic oath still taken by medical doctors in the contemporary world. Hippocrates said, 'As to diseases, make a habit of two things: to help, or at least to do no harm.'[23]

This first precept or principle provides the clearest connection between the principles of naturopathic medicine and the therapeutic order, discussed below. This first precept has two important components: using therapies that minimise risk of harmful effects and applying the least force necessary to diagnose and affect a cure. The first component shows a contrast to conventional medicine, where negative side effects of medications tend to be accepted as the norm and both surgeries and medicines can put the patient at substantial risk. Of course, in any system of medicine, there is a balancing of the risk of not treating against the risk of providing the available treatment.

However, in naturopathic medicine, the therapies used are generally much lower force interventions than those in conventional medicine. In both diagnostics and treatment, 'lower force' generally refers to procedures and examinations that are least invasive to the patient's body and expose the patient to the least amount of risk. With regard to treatment, it also refers to using more gentle therapies, those with a more subtle action, whenever possible, and using more aggressive therapies only when absolutely necessary to avoid risk.

The second precept points to the naturopath's avoidance of suppressing symptoms of disease, as to do so will interfere with the healing process. Symptoms, particularly those characterised by inflammation or discharge, are seen as expressions of the body's attempt to heal, and barring any harm from allowing them to run their course, suppression of symptoms is generally avoided. Suppression can be defined as anything that prevents the development, action or expression of a symptom, inhibiting or stopping a normal healing process from occurring. The concept of a normal healing process is discussed in the section on the process of healing below.

Palliation of symptoms is sometimes necessary when a disease process has risen to the level of being dangerous to the patient or when the patient is in a great deal of pain or discomfort. Palliation can be defined as making a disease or its symptoms less severe or unpleasant without removing the cause. It can be done in a way that is suppressive or in a way that is not suppressive, although both possibilities are not always available in every case. As an example, the palliation of a fever higher than 40°C can be achieved in a suppressive way by bringing the body temperature down to normal or close to normal with a non-steroidal anti-inflammatory drug, or it can be achieved in a non-suppressive way by gently lowering the core temperature using hydrotherapy to a level that is no longer dangerous but which allows the fever to still do its important work in the healing process. The different forms of palliation generally present the decision of whether or not to suppress — if there is a possibility for cure, for return to normal health, the second principle urges us to

avoid suppression to the greatest extent possible while ensuring patient safety.

The third precept ties in with the foundational first principle and calls for choosing therapies that rely upon the *Vis Medicatrix Naturae* for healing. In general, the more aggressive a therapy is, the more it is supplanting or potentially counteracting the intelligence of the *Vis Medicatrix Naturae*, and in cases where no harm will result from using only lower force interventions to support the body's natural healing processes, this precept urges that approach. This minimises to the greatest extent possible the potential of harm, because the naturopath is then working with the body's own innate healing capacity instead of trying to force healing by substituting a stronger intervention and their own judgment about what is right for the patient. The *Vis Medicatrix Naturae* knows what is right to bring the patient to health. In this, the importance of teaching the patient about the healing process is clear so that both the naturopath and the patient understand the diagnostic and treatment approach and respect the body's innate capacities.

It is often said that the corollary to the principle First Do No Harm is First Do Nothing. This acknowledges that it is not what the naturopath does that returns a person to health, but when the vitality is strong enough and the causes of illness are not overpowering the system, the *Vis Medicatrix Naturae* will return the patient to health without intervention.

Tolle Totum (Treat the Whole Person)

> *Health and disease result from a complex of physical, mental, emotional, genetic, environmental, social, and other factors. Since total health also includes spiritual health, naturopath[s] encourage individuals to pursue their personal spiritual development. Naturopathic medicine recognizes the harmonious functioning of all aspects of the individual as being essential to health. The multi-factorial nature of health and disease requires a personalized and comprehensive approach to diagnosis and treatment. Naturopath[s] treat the whole person taking all of these factors into account.*[17]

Treat the whole person is the third of the six principles of naturopathic medicine. This principle sets out a bio-psycho-social-spiritual approach to assessing and treating patients. Naturopaths take into account not just the physical body, but also the patient's state of mind and mental functioning, their emotional state and emotional intelligence, the exposures that their particular environment presents, the nature of their family and social relationships, and their connection with their spirituality. This holistic approach recognises that the various aspects of a person are intimately interconnected such that no part can be understood without reference to the whole, and the whole is greater than the sum of the parts. It is also an approach that puts the patient at the centre, rather than the disease.

In contrast to holism, a reductionist approach will tend to look at the minute parts of a system and extrapolate or attribute behaviours of that system to its isolated parts, essentially analysing the complex human organism in terms of its fundamental constituents — for example, biochemical pathways, cellular mechanisms or organ functions — and treating that analysis as sufficient explanation of the whole. This can be seen very clearly in the therapies of conventional medicine.

However, just because naturopathic medicine is a holistic pursuit, one cannot deny that it also has its reductionist components. Particularly as the realms of functional medicine and naturopathic nutrition increasingly overlap, and pharmacognosy continues to elucidate the specific biochemical and pharmacological actions of many herb constituents, naturopathic medicine is showing a tendency to gravitate more towards a reductionist approach. The third principle of naturopathic medicine might serve as a caution against moving too far in that direction. This is not to say that reductionist information about the workings of the minute aspects of the human organism does not have value — of course it does. But naturopathic philosophy and clinical theory urge that this information be seen within the wider scheme of things, rather than being considered as the 'truth' that ends the conversation. Any amount of understanding that we have from the material sciences must be considered in light of the organism as a whole, as well as the limits of the human intellect to process the full complexity of the human organism.

Naturopaths examine many facets of a person when considering what may be causing and what may remedy illness in an individual — each person's experience of illness is different — and a truly individualised view of the patient is necessary to a holistic approach. Taking an individualised view of both the patient and their experience of illness is necessarily a patient-centred approach. In 'Towards a global definition of patient centred care',[24] Stewart defines patient-centred care as that which:

> *(a) explores the patients' main reason for the visit, concerns, and need for information; (b) seeks an integrated understanding of the patients' world — that is, their whole person, emotional needs, and life issues; (c) finds common ground on what the problem is and mutually agrees on management; (d) enhances prevention and health promotion; and (e) enhances the continuing relationship between the patient and the doctor.*

Despite the source of this definition being a conventional medical journal, it is an apt description of the patient-centred naturopathic approach.

Tolle Causam (Treat the Cause)

> *Illness does not occur without cause. Causes may originate in many areas. Underlying causes of illness and disease must be identified and removed before complete recovery can occur. Symptoms can be expressions of the body's attempt to defend itself, to adapt and recover, to heal itself, or may be results of the causes of disease. The Naturopath seeks to treat the causes of disease, rather than to merely eliminate or suppress symptoms.*[17]

The fourth of the six principles of naturopathic medicine, Treat the Cause, flows naturally from the preceding principle, because treating the whole person necessarily implies treating the primary causes of illness, and *Tolle Totum* indicates where to look for the causes: the physical, the mental, the emotional and the spiritual.

Lindlahr's unity of disease as outlined in *Nature Cure* states that there are three primary causes of disease: lowered vitality, abnormal composition of blood and lymph, and accumulation of morbid matter and poisons in the system.[16] Of course, the era in which this book was published explains its dated language, and we would describe these causes somewhat differently today. Lindlahr's three primary causes of disease point to the conditions of the body that are setting up an environment for illness to take hold. If disease were a plant, then the condition of the body is the soil in which the plant of illness may grow. A person can give illness a fertile soil in which to take root or can deny it that fertile soil through appropriate habits that follow natural laws. A modern naturopath would refer to this foundational condition of the body as the 'terrain' for disease. Contrast this to a pathogen, which is like the seed being planted in that terrain.

To describe briefly each of Lindlahr's three primary causes, the concept of vitality has been discussed above as related to the principle of the *Vis Medicatrix Naturae*, as the 'fuel that runs the engine'. Lowered vitality is a state of depletion that occurs as the body, mind, emotions and spirit are denied the conditions needed to maintain their healthy function, or it can occur constitutionally. In naturopathic philosophy and clinical theory, anything that negatively affects the state of the vitality is termed a 'disturbing factor', and the longer that disturbing factor persists, the more depleted the vitality becomes.

'Abnormal composition of blood and lymph' relates primarily to the proper access of the body to necessary nutrients. If a person doesn't ingest, digest or absorb well the essential proteins, fats, carbohydrates, vitamins, minerals, and other micronutrients, or they don't breathe properly to maintain the appropriate levels of the various blood gases, then they do not have what they need in their blood and lymph to nourish their cells. 'Accumulation of morbid matter and poisons' in the system relates to the build-up of toxins over time, whether from endogenous or exogenous sources. If the cells and tissues, and perhaps especially the organs of elimination and extracellular fluids, are burdened with a large toxic load, then cellular function is disturbed or compromised, and organ systems begin to experience dysfunction.

As an aside, Lindlahr goes deeper than these three primary causes and states that they are, themselves, caused by a greater underlying common cause: 'transgression of natural laws in thinking, breathing, eating, dressing, working, resting, as well as in moral, sexual and social conduct.'[16] Again, this comports with the language of his time, but these ideas are reflected in modern language in the section below on the determinants of health. From his three primary causes, it appears as if Lindlahr places all causes of illness in the physical body. However, his list of 'transgressions of natural law' demonstrates that he also considered mental and emotional influences and elsewhere in *Nature Cure* he lists 'mental afflictions' as a secondary cause of illness. Finally, it is worth noting that Lindlahr's three primary causes of disease are closely interrelated, because not only do they all spring from the same deeper causes in lifestyle, but also once one has begun, it is more likely that the others will follow.

Returning to the concept of the terrain as the internal environment of an organism that provides the setting for either health or disease, as well as determining an individual's tendencies or susceptibilities to illness, we must consider the endogenous production of toxins in the body and the condition of toxaemia. Toxaemia is the production of high levels of metabolic waste created by maldigestion — the dysbiotic bacterial metabolism of poorly digested food in the intestines. These toxins enter the blood, irritate tissues systemically, interfere with organ function and become the basis for chronic illness, inflammatory processes, autoimmune processes and other dysfunctions.[25]

Endogenous toxicity sourced in gastrointestinal dysfunction and inflammation is one framework from which to look at all three of Lindlahr's primary causes of disease. Though this is a long-standing traditional naturopathic theory, it is clear from recent research that the absence of beneficial bacteria in the colon and/or the presence or overgrowth of non-beneficial bacteria or other organisms, in either the small intestine or the colon, are correlated to various diseases, particularly those involving dysregulation of the immune system. From a more traditional perspective, we can surmise that the action of dysbiotic flora on various foods during digestion, as well as the failure of proper digestion in the absence of necessary beneficial bacteria, forms toxic by-products, which then increase the total toxic load on the body's systems of elimination and which can overwhelm these systems, producing symptoms of illness. Chronic gastrointestinal dysfunction and inflammation will reduce digestive and absorptive capacities for essential nutrients and ultimately devitalise the entire system via chronic impacts on lymphatic and nervous tissues associated with the gastrointestinal tract (GIT). It is this line of thought that supports the traditional naturopathic approach of seeking the cause of illness in the digestive system and treating the cause accordingly.

Of course, it is important to note that even the normal metabolic processes produce a regular baseline load of endogenous toxins that must be eliminated from the body. This is what our eliminative organs are designed to do. When they are overwhelmed by a heavy load of toxins from other sources, or when the body's organs of elimination are not functioning optimally, even the accumulation of our normal metabolic wastes can create the symptoms of illness. Finally, we are exposed in the modern world to a plethora of exogenous toxins throughout our daily lives, all of which contribute to the body's total toxic load and affect the capacity of the eliminatory organs to maintain a balanced internal environment. We can draw from this an understanding of the naturopathic approach to placing a primary treatment emphasis on detoxification, depuration and elimination in

order to address the accumulation of toxins as a cause of disease.

Docere (Doctor as Teacher)

> *The original meaning of the word 'doctor' is teacher. A principal objective of Naturopathic medicine is to educate the patient and emphasize self-responsibility for health. Naturopath[s] recognize and employ the therapeutic potential of the [practitioner]-patient relationship.*[17]

This is the fifth of the six principles, and despite its brevity, there are several very important concepts within it. Educating the patient is just one component; it is well understood that naturopaths teach their patients about how their bodies function, the nature of disease and healing, and the importance of health-supporting behaviours. Second is the idea of emphasising self-responsibility. If a naturopath is teaching their patient how to support their own health and also emphasising self-responsibility, then they are not acting in a paternalistic way; that is, the naturopath is not directing the patient nor acting as an authority above them. Instead, they are working in partnership with the patient, serving as a guide and allowing them to access and use the information to empower their own behaviour.

The third important component of this principle is the recognition and employment of the therapeutic potential of the practitioner–patient relationship. This underscores the idea that the cultivation of a meaningful therapeutic relationship with patients is a type of teaching or guiding in itself, and it has value in the healing process of the patient. In order to work with patients in this way, a naturopath must get to know them well, within the context of a long-term, continuing therapeutic relationship, and develop trust so that they will share their full range of experiences and challenges to allow the constructing of a picture of who they are as a whole person. The naturopath provides a safe, non-judgmental space for the patient to be the whole of who they are. This can call for significant time and patience on the part of both the naturopath and the patient.

The ability to be a therapeutic presence for patients can be one of the most valuable skills that a naturopath can apply in the treatment room. Therapeutic presence can be defined as 'bringing one's whole self into the encounter with clients, by being completely in the moment on multiple levels: physically, emotionally, cognitively, and spiritually.'[26] This includes being unconditionally present with the patient, deeply listening from a place of discernment and non-judgment, and an ability to take on a witness perspective on both self and other. Attention is given to both verbal and non-verbal communication, and the cultivation of self-awareness of attitudes, words and judgments, as well as emotional intelligence on the part of the naturopath, is a foundational practice.

The emphasis placed on self-responsibility in this principle points to the benefits of an egalitarian relationship between practitioner and patient in naturopathy. In Western culture, the conventional healthcare system has historically tended to create more of an active–passive or guidance–cooperative relationship between doctor and patient, with the doctor assuming a more authoritarian role sitting hierarchically above the patient. Within this healthcare culture, it can sometimes be a challenge for a naturopath to facilitate the creation of a more egalitarian relationship with a patient. However, it is quite often the case that patients seeking care from a naturopath are looking for a space where their concerns will be fully heard and where they are a full partner in their own health decisions, making those decisions based upon an understanding of their body and their condition and the treatment options and potential outcomes available. It is this type of empowerment that the naturopath seeks to create.

The act or action of 'teaching' may be accomplished by a naturopath in any number of ways and in a wide array of settings. Providing information or sharing specific knowledge with a patient one-on-one can help them understand some aspect of themselves (body, mind, emotions, spirit) better, and that understanding then becomes a framework around why certain recommended treatments or behaviour changes can be useful. This can be most powerful when the naturopath can identify where the largest gaps are in a person's knowledge about health. But this type of informational support results in action or behaviour change in the patient only when the underlying reason for a detrimental behaviour is a lack of understanding or information. For example, providing information to a smoker regarding the negative health impacts of smoking is unlikely to motivate them to change that behaviour, because most smokers are already very aware of the increased incidence of some diseases that result from smoking.

Beyond providing informational support to patients, or even providing that support via community lectures or writing, naturopaths often support and teach patients by assisting them in their own process of self-evaluation, helping them to see where their own blind spots are, or misalignments between their beliefs and actions. This also generally will include emotional support via counselling and assisting patients to understand how various mental and emotional patterns can be connected to problems with physical health. The connection between early childhood trauma and various types of chronic illness that are often present in patients who seek care from a naturopath, such as autoimmune disease, is an important consideration and the 'safe space' afforded in a naturopathic consultation can often provide a place for past traumas to rise to the surface to be healed. Thus, it is crucial for a naturopath to have a good referral network of practitioners who are more highly trained in working with mental and emotional conditions to work with in partnership in complex cases.

Preventare (Prevention)

> *Naturopathic colleges emphasize the study of health as well as disease. The prevention of disease and the attainment of optimal health in patients are primary objectives of naturopathic medicine. In practice, these objectives are accomplished through education and the*

> *promotion of healthy ways of living. Naturopath[s] assess risk factors, heredity and susceptibility to disease, and make appropriate interventions in partnership with their patients to prevent illness. Naturopathic medicine asserts that one cannot be healthy in an unhealthy environment and is committed to the creation of a world in which humanity may thrive.*[17]

This is the sixth and final principle of naturopathic medicine. It is important to note in introducing this principle that, whether a naturopath is aiming to assist a patient in healing from disease, or preventing potential future disease, the therapeutic approach still follows the same strategies. All six of the principles apply in a preventive context as well as in the context of illness, and the clinical theory as discussed in the following sections likewise applies to both contexts.

There are many different types of preventive care, and naturopathic medicine approaches these from all levels. Primary prevention can be defined as actions taken to prevent a state of illness from ever occurring. In naturopathic medicine, primary prevention might include diet and lifestyle modification; instruction on health supportive daily habits; smoking, drug or alcohol abuse cessation; weight loss; or counselling that assists a patient in resolving mental or emotional patterns that might eventually lead to either physical or mental illness. Primary prevention also commonly falls into the public health arena, with measures such as infectious disease reporting, sanitation and food safety regulations.

Secondary prevention can be defined as early detection of sub-clinical disease; that is, disease that is not yet showing outward signs and symptoms. In large part, this type of prevention falls into the realm of conventional medicine. Examples of secondary prevention are PAP smears, mammograms, scheduled screening blood tests and bowel cancer screening. A naturopath can still play a vital role in ensuring appropriate secondary prevention for patients. Naturopaths, in working holistically, will tend to gather significantly more information from patients and to see patients more frequently than their GP, and thus, naturopaths are uniquely situated to identify any concerns that might signify a need for further investigation to detect early development of diseases. Referral to the GP is the responsibility of a naturopath in such instances. Naturopaths also play a role in directly addressing early risk factors for more severe disease, such as high blood pressure, chronic inflammation or blood sugar dysregulation.

Lastly, there is tertiary prevention, which can be defined as actions taken to reduce the negative effects of disease or treatments or minimise reduced function from established disease. For patients with severe chronic or terminal illnesses, this can be an important role of the naturopath, to assist in support of a higher quality of life, a subjective sense of greater wellbeing, palliating of side effects of high force medications, or assisting healing from surgery. In conventional healthcare, tertiary prevention falls primarily into the realm of palliative care, though heroic conventional treatments quite often prevent a disease or injury from having more profound impacts on structures or functions of the body.

At the beginning of this section on prevention, the point was made that all the other five principles also apply in a preventive care context. Now, coming full circle, we will close this discussion of the six principles of naturopathic medicine by noting that the opposite is also true: the concept of prevention is also built into all the other five principles. A naturopath's support of the *Vis Medicatrix Naturae* is naturally preventive, as it assists in maintaining a high level of vitality, which supports health generally. A naturopath's recommendation of the least invasive treatment methods under the principle of First Do No Harm will focus on foundational health behaviours first, which are naturally preventive as well as being curative. Recommendations aimed at the cause of an illness will help to prevent recurrence by making the patient aware of the causes of disease and how to avoid them. Treating the whole person will serve to give the naturopath a view over all parts of a person, even those that are not at present dysfunctional, allowing treatment recommendations that support the wellness of the whole both curatively and preventively. And finally, it would be hard to conceptualise a naturopath as teacher separate from the concept of prevention, as naturopaths empower and motivate their patients to a state of wellness through these two concepts hand-in-hand.

> *People are beginning to realize that it is cheaper and more advantageous to prevent disease, rather than to cure it.*
>
> ***Dr Henry Lindlahr,* Nature Cure**[16]

NATUROPATHIC CLINICAL THEORY: CONCEPTUAL FRAMEWORKS

While the six principles discussed in the preceding section provide the main philosophical foundation that guides the naturopathic approach, clinical practice requires further conceptual frameworks that guide how a naturopath views disease and healing processes, how a naturopath approaches development of a treatment strategy for each patient, and what the specific components are of a holistic view of health. These frameworks are discussed below.

The process of disease and healing

The naturopathic view of the process of healing,[20] as conceptualised and defined by Dr Jared Zeff, is represented in Fig. 1.3.

Beginning at the top of this schematic, the naturopathic perspective of the process by which acute illness ('reaction') occurs is shown as: a person begins in a state of normal health, then disturbing factors are introduced which cause a disturbance of function, then the disturbance of function causes a reaction — an acute illness. Disturbing factors are discussed further in the

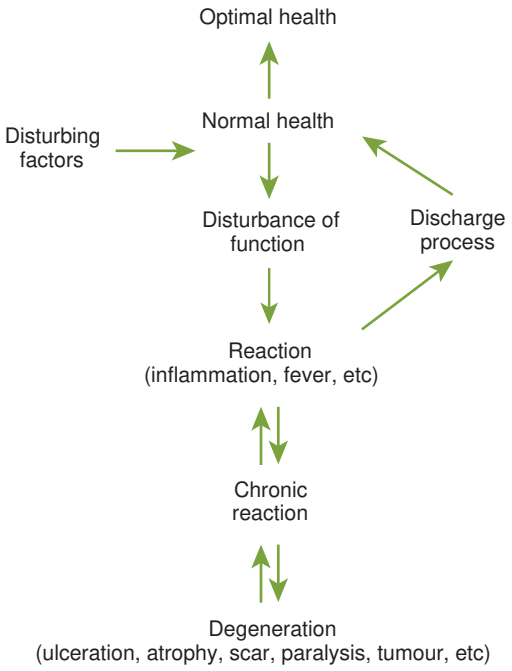

FIGURE 1.3 The process of healing

Zeff JL, Snider P, Myers SP et al. A hierarchy of healing: the therapeutic order. In Pizzorno JE, Murray MT, editors. Textbook of natural medicine. 4th edn. St Louis: Elsevier; 2013.

section below on the therapeutic order. However, a few examples to consider would be inappropriate diet, overworking/stress or excessive alcohol or caffeine intake. These speak to the concept of setting up the 'terrain' for illness, discussed earlier in this chapter.

Setting aside for now the possibility of more severe or damaging acute illnesses or injuries, when the acute reaction is not suppressed and the process is allowed to run its course, the disturbing factors are removed. Then the person has a high enough level of vitality and the acute reaction guided by the *Vis Medicatrix Naturae* will result in the body going through a discharge process, which returns the body to normal health. This is represented in the schematic by the arrows moving upwards to the right from the reaction stage back towards the top and normal health. Note that a person does not travel in reverse from the reaction stage to normal health without going through the discharge process. A discharge can come in many forms, from those that we are familiar with in acute illness such as a runny nose, coughing, sneezing, vomiting or diarrhoea, to those that might be less easily recognised as a discharge, such as sweating, skin rashes, odours, crying or other emotional outbursts.

This will obviously not be an appropriate approach for all acute conditions. Acute conditions are generally those that are self-resolving within a relatively short period, and they have an inflammatory component. But this is a broad spectrum of illness or injury, from the common cold, minor skin infection or low-grade gastrointestinal virus to severe bleeding or life-threatening illnesses such as appendicitis, severe asthma or meningitis. The self-resolving nature of an acute illness must be recognised as either return to health in a relatively short time, or potentially death if appropriate intervention is not applied. One of the tasks of the naturopath is to make a judgment in the case of acute illness as to whether a higher force intervention is needed to preserve life or prevent major damage to the organism and to refer appropriately and in a timely manner. But in the event of an acute illness that can safely be left to run its course, supported by advice to remove any disturbing factors and to rest to conserve the vitality, this will allow the reaction to proceed through all of the stages of inflammation to the discharge process and result in a return to health.

We return to the process of healing schematic in Fig. 1.3. Consider what occurs when there is suppression of the acute reaction: the continuation of disturbing factors, which creates a cumulative burden on the body and/or a lowered state of vitality that prevents a sufficient discharge process, will drive the human organism into a state of chronic reaction.[20] In contrast to an acute reaction, which is generally brief and self-resolving, a chronic disease/reaction is of longer duration and, by its nature, generally does not self-resolve as long as the factors that led to the chronic reaction remain in place. If the chronic reaction is of a great enough severity or long enough duration, it can then result in a degenerative state, including structural changes to the body that may ultimately be irreversible.

A chronic reaction, or disease state, is viewed as reversible within this framework, with the approach being to remove the disturbing factors that are placing a continuing burden on the body, stimulate the *Vis Medicatrix Naturae* to support self-healing, and avoid suppression of any resultant discharge process, within the bounds of safety for the patient in that process. More specific discussion of how this is done in the context of patient treatment can be found in the section on the therapeutic order, below. This general approach supports the patient in moving from the chronic reaction state back to a state of acute reaction, from which the discharge process can proceed, resulting in return to health. However, depending on the patient and their condition, multiple iterations of this process can be necessary to fully regain normal health, with each iteration of discharge moving the patient closer to that state.

The process whereby a patient moves from a chronic reaction and devitalised state to an acute reaction and discharge is often referred to as a 'healing crisis', though the term 'healing reaction' is more apt. According to Lindlahr, '[a] healing crisis is an acute reaction, resulting from the ascendancy of Nature's healing forces over disease conditions.'[16] The primary thing to note with regard to a true healing reaction is that it is an expression of the action of the *Vis Medicatrix Naturae* in the body's attempt to return itself to normal health. In that sense, it is the same as a discharge process in any acute illness. A healing reaction is usually short-lived and self-limiting and generally, while the patient may feel acutely worse in some symptoms, they will have an overall sense of feeling more well.

When a patient experiences an increase in symptoms during treatment, it is the task of the naturopath to discern

whether it is a healing reaction or an actual increase of symptoms due to a worsening underlying condition. An examination of the pattern of the acute reaction within the overall history of the patient's case will often elucidate the difference. And naturopaths are assisted by Hering's rules of cure in this differentiating process. Hering's rules state that healing, that is resolution of symptoms and/or pathology, will generally occur from the top of the body downwards, from the deeper, more vital organs to the more superficial or less vital organs, from the centre to the periphery (i.e. core to extremities), and from the most recent to the oldest, with reference to the original occurrence of a symptom or pathology.[27] An examination of the patient's symptoms during an acute reaction often reveals these patterns, indicating a movement towards return to health and, if these patterns are not seen in the patient's symptom picture, it can indicate that the healing process is not moving in the right direction or the disease state is actually moving deeper.

In the process of the healing reaction, the symptoms of the reaction, as an expression of the *Vis Medicatrix Naturae*, must not be suppressed except in cases where it is necessary for the safety of the patient, and in that event, as minimal a level of suppression as possible. A suppression during the process of a healing reaction will stop the healing process and reverse it, driving the chronic reaction back to a deeper state.

The therapeutic order

> *The therapeutic order is a natural hierarchy of therapeutic intervention, based on or dictated by observations of the nature of the healing process, from ancient times through the present.*[20]

The therapeutic order, presented in Fig. 1.4, represents the framework within which a naturopath works to develop specific treatment recommendations for individual patients. It is deeply interwoven with the six principles and with the process of healing. The therapeutic order 'operationalises' the general philosophy that crosses all six principles to use the lowest force interventions possible to both support the natural work of the *Vis Medicatrix Naturae* and avoid harm to the patient. This first addresses the cause(s) of illness, and does so in a holistic manner with regard to all aspects of the body, mind and spirit of the patient, allowing the patient to learn through the therapeutic process how to heal and maintain their own health.

1. Establish the conditions for health
   - *Identify and remove disturbing factors*
   - *Institute a more healthful regimen*
2. Stimulate the healing power of nature (*Vis Medicatrix Naturae*); the self-healing processes
3. Address weakened or damaged systems or organs
4. Correct structural integrity
5. Address pathology: use specific natural substances, modalities or interventions
6. Address pathology: use specific pharmacological or synthetic substances
7. Suppress or surgically remove pathology

FIGURE 1.4 The therapeutic order: hierarchy of healing

Zeff JL, Snider P, Myers SP et al. A hierarchy of healing: the therapeutic order. In Pizzorno JE, Murray MT, editors. Textbook of natural medicine. 4th edn. St Louis: Elsevier; 2013.

The therapeutic order itself can be viewed through different lenses. It can be very helpful when first learning to work with this framework to view each level discretely — to compartmentalise the types of interventions or therapies that can fall at each level and to view the levels in a step-wise manner to maximise understanding of the underlying philosophy. However, an experienced practitioner mind can view the framework through a more complex lens, with an understanding that each level of the order will tend to be iterative of the level(s) above it, and that compartmentalisation of certain treatments at a given level can be an over-simplification. For example, if a practitioner prescribes a herb to support liver function in a patient with an overload of toxins or signs of liver compromise, one view of this is to put that therapy at level 3 of the therapeutic order, as tonifying a weakened system. However, it can also be argued that a well-functioning liver is essential to vitality, and so strengthening it is perhaps also falling at level 2, as stimulating the *Vis Medicatrix Naturae* (an argument that is even more compelling if the energetic aspects of the herbs are taking into consideration). For the purposes of this chapter, we will adopt the more compartmentalised view in order to establish firmly an understanding of the general tenor of each level of the order.

LEVEL 1: ESTABLISH THE CONDITIONS FOR HEALTH

The therapeutic order starts with the lowest force interventions that naturopaths can recommend — those that are at the heart of a person's daily lifestyle, diet and habits. The first level of the order establishes this as a two-pronged approach: to identify and remove disturbing factors and to institute a more healthful regimen. This level provides a direct connection to the process of healing, where we see that disturbing factors are the causative force that pushes the organism into a state of reaction. We have discussed the removal of those disturbing factors as a vital component of the healing process — this is treating the cause. Another term that can be used to describe disturbing factors is 'obstacles to cure'. The terms are relatively synonymous, but the difference in description can provide insight to a naturopath who is working to discern the patient's needs at this level of the therapeutic order. A disturbing factor might be readily identifiable as an active force in a person's life, whereas an obstacle to cure might look more like a blockage. In practice, these often turn out to be the same things — the things causing

illness are the same things that are getting in the way of a return to health.

If the first prong is viewed as 'non-healthful things to be removed', then the second prong, instituting a more healthful regimen, can be viewed as 'healthful things to be added' to a patient's way of life. Again, at this first level, the naturopath is focused on the lowest force interventions, which generally will consist of behavioural or dietary changes on the part of the patient. The guidance for the many different areas of life and habit that might be addressed in a holistic manner at this level is provided by the determinants of health, which are discussed in the final section below.

Even though this first level of the order contains the lowest force interventions, it is important to note that, depending upon the patient's overall condition, state of vitality or toxicity, and specific pathological conditions, the safety of the patient must always be taken into consideration with any treatment recommendation in order to avoid harm. For example, advising a patient with pronounced kidney dysfunction to change their water intake, or advising a patient with insulin-controlled diabetes mellitus to alter their dietary patterns, must be done cautiously and with close attention to the potential negative outcomes of these recommendations, which would be safe in other types of patients.

LEVEL 2: STIMULATE THE *VIS MEDICATRIX NATURAE*

When using the lowest force interventions at the first level of the therapeutic order, the naturopath is partnering with the patient to give the *Vis Medicatrix Naturae* what it needs to bring the person back to normal health and to remove things that are getting in the way of it doing its job. But in that first level we are relying on the patient's vitality in its current state to drive the process of healing. Some patients can be helped at the first level alone, but many patients, especially those with chronic illnesses, have a lowered vitality and need additional intervention.

At the second level of the therapeutic order, the naturopath is providing a slightly higher level of intervention, while still relying on the patient's innate healing capacity. This acknowledges that the patient's current state of vitality may need support or stimulation in order for the first-level interventions to return the patient to health. At the second level, the *Vis Medicatrix Naturae* is stimulated in order to increase the effectiveness or strength of the patient's innate healing processes.

There are several ways that this can be accomplished, and the particular intervention chosen for an individual patient will depend on the condition of the patient, their level of vitality and their choices as to what to pursue. Perhaps the simplest ways to stimulate the *Vis Medicatrix Naturae* are by exposure to the natural elements: fresh air, sunshine, time spent in nature, honouring of the rhythms of nature in daily life, and the therapeutic use of water are some examples. With hydrotherapy being one of the core therapeutic modalities of traditional naturopathy, the modern body of knowledge on the therapeutic use of water is vast, can be applied in a highly individualised way and is perhaps underappreciated in modern naturopathic practice.

Other methods for increasing vitality and stimulating the *Vis Medicatrix Naturae* are modalities that we might call 'energetic' in nature, such as breath work or gentle body movement, ingestibles such as homeopathy or flower essences, and acupuncture or other related therapies that move or unblock the flow of energy. The latter of these are considered to be stimulations that are more specific because they tend to be administered according to the particular presentation of the patient. However, their effects nonetheless result in a stimulation of the vital force.

LEVEL 3: ADDRESS WEAKENED SYSTEMS

If interventions or treatments applied at the first two levels of the therapeutic order are insufficient to start the patient on the path towards healing and support them in continuing to move in that direction, then naturopaths move on to the third level, the next higher level of force in treatment. This is often the case in longer-standing chronic reactions or in cases of more severely lowered vitality, in which organs can be compromised, blocked or congested from long-term stresses. Naturopaths select treatments at this level based upon the particular systems in each patient that are showing signs of decreased or compromised function. Naturopaths often tend to gravitate to looking first at the digestive and detoxification systems, as these systems are considered the foundation of health as discussed earlier in this chapter. However, beyond this, the nervous, endocrine, cardiovascular, respiratory, genitourinary, musculoskeletal and integumentary systems must be considered, as well as placing some focus on systems within systems, such as the menses within the endocrine system.

This level will tend to include natural therapies that are ingestible and are providing specific support to an organ or a system. Many, but not all, clinical nutrients (referring to nutraceuticals rather than nutrition via food) and herbal medicines used nutritively or to stimulate or support particular biochemical pathways or cellular systems fall at this level. It is also at this level where there begins to be cross-over between naturopathic medicine and functional medicine, with specific testing being conducted to look at biomarkers of system or organ function prior to prescribing treatments aimed to stimulate or support specific biochemical or physiological processes. This implies a reduced deference to the *Vis Medicatrix Naturae* — it is a movement into the realm of being slightly more forceful, of isolating and encouraging certain functions in the body rather than allowing the body to return to balance on its own design. However, when systems or organs have been overloaded or compromised for some time, this level of treatment has great utility, and it is still working *with* constructive natural processes rather than *against* pathological processes, as will be seen in the fifth level, below.

LEVEL 4: CORRECT STRUCTURAL INTEGRITY

Structure and function are closely intertwined. If a structure is compromised, for example blood flow or nerve conduction is impeded to an organ, then the function of that organ will be changed — weakened, irritated/inflamed, stagnated. Sometimes a structural change precedes a functional change, as in an injury that causes some skeletal misalignment or scar tissue formation, and sometimes functional change can precede structural problems, as in chronic inflammation that causes muscles to place asymmetrical stresses on the skeleton, nerves and blood vessels.

Naturopathic manual therapies can be used to address some structural issues. If a functional change caused the structural problem, then the underlying functional problem must also be addressed at the preceding levels of the therapeutic order, or the structural therapy will likely have only short-lived effect. If a structural problem was created by a forceful trauma to the body or postural habits, then the treatment may be more straightforward. Along with manual therapy by the naturopath, often chiropractic, osteopathy, specialised forms of massage, exercise prescriptions, or physiotherapy can be great adjunctive therapies when addressing structural integrity. Naturopathy has a long history of being intertwined with chiropractic and osteopathy, and many early naturopaths were also trained in these medical systems.

LEVEL 5: ADDRESS PATHOLOGY WITH NATURAL INTERVENTIONS

In the first four levels of the therapeutic order, the specific nature of the pathology is not directly considered in relation to the Western pathological diagnosis — the naming of the disease in those terms — except as it is relevant to ensuring the safety of the patient and avoidance of harm. Instead, the person as a whole has been considered, as well as their lifestyle and environment, along with identifying what organ systems or structures might be under-functioning or compromised. At the fifth level of the therapeutic order, the naturopath turns to look directly at the identified pathology and pathophysiology. Most patients will improve and move towards the direction of healing when the first three to four levels of the therapeutic order are applied. But in some cases, it is necessary to move to a higher level of force in our interventions.

At the fifth level, the naturopath is using natural interventions from the same point of view as a medical doctor uses synthetic pharmacological agents. Hence, this level of the therapeutic order is often referred to as 'green allopathy'. At this level, the natural intervention is being used to directly address —that is, counteract — the pathogenesis or the signs and symptomatology of the disease. For example, in a case of type 2 diabetes mellitus, herbs or nutrients used to target lowering elevated blood sugar or increasing insulin sensitivity of cells directly, or in a case of an inflammatory disease, herbs or nutrients used with a directly anti-inflammatory action. As the second of these examples indicates, treatments at this level can be suppressive, and this is one of the key reasons why this level is considered to contain higher force interventions. But in addition this level is where the naturopath turns from working with the organism to working against the disease, taking the naturopath a step away from the foundational philosophies.

LEVELS 6 AND 7: CONSIDER PHARMACOLOGICAL DRUGS AND SURGERY

The inclusion of these levels within the therapeutic order is critical in order to acknowledge both the full range of treatments that are available in any given case and the ultimate necessity of these high force interventions in some cases. Because these two levels of therapeutics are beyond the scope of a naturopath's practice in Australia and most of the world, they will not be discussed in any detail here. However, again, it is incumbent upon a naturopath to use their training and experience to assess risk correctly for all patients and to make appropriate referrals to the GP, specialist or emergency department when these levels of treatment are indicated. Conversely, use of suppressive therapies when it is not necessary will pose an obstacle to the process of healing and can ultimately prevent a cure.

The determinants of health

In considering disturbing factors in the process of healing, or what constitutes 'establishing the conditions for health' at the first level of the therapeutic order, the naturopath is guided by a final framework, the determinants of health. Within this framework, there are three major categories: inborn traits, disturbances and lifestyle factors.[15,20]

Inborn traits include a person's genetic make-up; maternal diet, lifestyle, emotional state, general health and toxic exposures; and the individual's constitution.[15,20] Historically, naturopaths and other practitioners alike might have considered that most of these would be beyond the reach of any type of therapy to influence after birth. However, the growing field of epigenetics and the concept of neuroplasticity are demonstrating that our environment, stressors, emotional state and many other factors will influence which of our genes are being expressed at any given time and how our nervous system might adapt to overcome innate traits. It is possible that changes in lifestyle, diet, energetics, emotions and psychological and mental patterning can influence the impact that genes or other inborn traits have on who a person ultimately becomes. Likewise, with a person's constitution, it will always be what it is — it does not change — but the particular expression and robustness of our constitution can be influenced with constitutional remedies/therapies and positive lifestyle choices.

The second major category is disturbances, or disturbing factors, which connects directly to the process of healing and the first level of the therapeutic order. Disturbances can be events that have happened in the past that have left a longer-term lack of wellness in the body, such as past illnesses (particularly chronic or recurrent ones), injuries, medical interventions, traumas or toxic exposures. They can also be current disturbances which

Spiritual life	Digestion, toxaemia
Fresh air	Rest
Exposure to nature	Sleep
Clean water	Exercise
Natural light	Socioeconomic factors
Loving and being loved	Culture and community
Diet, nutrition	Meaningful work
Unadulterated food	

FIGURE 1.5 Determinants of health: behavioural, environmental and other life factors

Zeff J, Snider P. Course syllabus: NM5131, Naturopathic clinical theory. Seattle: Bastyr University; 1997–2005. Used with permission of Jared Zeff.

consist of any aspect of the person's current life that is pushing the body, mind, emotions or spirit towards reaction or towards maintaining a state of chronic reaction.[15,20] As with the first category, there may be factors here that are beyond treatment; for example, if a patient has had an organ removed. In development of treatment recommendations, the naturopath and patient work in partnership to identify these past and present disturbances, remove them where possible from present life conditions, and work retrospectively on any lingering effects from past disturbances that were not fully resolved, which can be on the physical, mental, emotional or spiritual levels. On this last point, it is important to look at whether and how past illnesses or symptoms may have been suppressed for a view into what may arise to be healed as the treatment process continues.

The third major category covers lifestyle factors across a holistic array of considerations that include socioeconomic, relational, environmental and other factors outside the realm of the individual patient.[15,20] Fig. 1.5 features a list of some of these determinants of health, though it is not exhaustive. The principle of treat the whole person is perhaps seen most in operation in this list of factors that contribute to human health, and the second prong of level 1 of the therapeutic order is represented here. Instituting a more healthful regimen, viewed holistically, will seek to address what can be addressed across all these factors, while acknowledging that the naturopath, and indeed the patient, can often have only minimal, if any, influence in some of these areas.

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2 Principles of herbal medicine

Sue Evans

BRIEF HISTORY OF WESTERN HERBAL MEDICINE

The use of plants as medicines predates humans on the planet, as birds and animals have been observed to use plants in ways that benefit their health and treat disease.[1,2] With regard to our own species, there is evidence that medicinal plants, including those used today, have been highly valued since prehistoric times.[3,4]

Given their widespread and continuous use, medicinal plants have been called 'the birthright of mankind'. They belong in the kitchen as much as in the clinic or laboratory, as they continue to play a role with household medicine providing immediate care for minor ills. Older generations, including those who do not see themselves as knowledgeable about the use of medicinal plants, may use plant-based remedies for dealing with day-to-day health problems, such as ginger root for nausea or a spicy hot lemon drink for colds.[5]

In addition, medicinal plants continue to be used across the world as a stand-alone therapy or as part of naturopathic treatment.

Hippocratic writings and humoral medicine

Early documentation of Western herbal medicine (WHM) is found in the 60 treatises that comprise the Hippocratic Corpus. These are the works of the followers of the Greek healer Hippocrates of Cos, and were written over a period of about 700 years between the fifth (or early fourth) century BCE and the second century CE. They contain references to 380 plant species and their uses in 3100 different conditions.[6] Many of the plants documented in these works are well known today. They include garlic and fennel, oregano and elder, pomegranate and chaste tree, among others.

The origins of humoral medicine, central to Western medical thought until the Age of Enlightenment (18th century), are also found in these writings. Humoral medicine is based on the idea that the four elements — earth, water, fire and air — are the basis of all existence and are expressed in four humours — melancholic, phlegmatic, choleric and sanguine — each of which is related to a particular season and has its own qualities (see Table 2.1).

In this system, individual personality traits were understood to be related to specific humours (see Box 2.1 for an early description of these traits), and disease was seen as largely due to an imbalance of the humours. Consequently, the actions of medicinal plants were understood as assisting in rebalancing the humours. This is also the origin of plants being described as heating, cooling, moistening and drying.

Middle Ages and the spice trade

Throughout the Middle Ages medicinal plants were fundamental to medical care, both among the social and medical elites, and within the monasteries and nunneries which provided primary healthcare to their communities. Medieval herbals document the detail of plant use.[7] At this time some medicinal plants were cultivated and traded locally, and others were imported.[8] The most valuable of the imported plants were the spices.

Spice plants have been traded for medicinal, culinary and ritual uses since biblical times, their Asian origins shrouded in mystery for centuries. When ingested, they promote a sense of warmth. This was a particularly important quality in the cold winters of northern Europe and these plants were understood in humoral terms to counter the problems of the phlegmatic (damp) humour. Spices were traded over vast distances overland via long supply chains. They changed hands (and increased in price) many times between, for example, the islands of Banda and Run, now part of Indonesia (source of nutmeg and clove), Sri Lanka (source of cinnamon) and India (source of black pepper).

The long supply chains of these valuable commodities were controlled by Muslim traders. The high level of distrust between Christians and Muslims in the Middle Ages motivated European leaders to find ways to disrupt the Muslim domination of this lucrative market. This was one of the factors behind the instigation in the 15th to 17th centuries of maritime journeys which became known as the voyages of exploration. Individuals including Vasco da Gama, Christopher Columbus and Ferdinand Magellan led these expeditions. Of particular interest in the context of the history of Western herbal medicine is that these journeys not only were seeking alternative supply routes for spices, but their brief was also to seek out other medicinal plants that might be useful in Europe.[9–11]

TABLE 2.1 Humoral theory and related phenomena				
Humour	Sanguine	Choleric	Melancholic	Phlegmatic
Substance	Blood	Yellow bile	Black bile	Phlegm
Quality	Hot and moist	Hot and dry	Cold and dry	Cold and moist
Season	Spring	Summer	Autumn	Winter
Element	Air	Fire	Earth	Water

Source: Trickey Enterprises (Victoria) Pty Ltd. The humoral theory, p. 8. Women, hormones and the menstrual cycle. 3rd ed. Melbourne.

BOX 2.1 The Regimen Sanitatis Salernitanum (a Salernitan regimen of health)

Poem by unknown author of 12th or 13th century.

Fat and jolly of nature are those of sanguine humor.
They always want to hear rumors,
Venus and Bacchus delight them, as well as good food and laughter;
They are joyful and desirous of speaking kind words.
These people are skillful for all subjects and quite apt;
For whatever cause, anger cannot lightly rouse them. They are
Generous, loving, joyful, merry, of ruddy complexion,
Singing, solidly lean, rather daring, and friendly.
Next is the choleric humor, which is known to be impulsive:
This kind of man desires to surpass all others.
On the one hand he learns easily, he eats much and grows quickly;
One the other hand, he is magnanimous, generous, a great enthusiast.
He is hairy, deceitful, irritable, lavish, bold,
Astute, slender, of dry nature, and of yellowish complexion.
There remains the sad substance of the black melancholic temperament,
Which makes men wicked, gloomy, and taciturn.
These men are given to studies, and little sleep.
They work persistently toward a goal; they are insecure.
They are envious, sad, avaricious, tight-fisted,
Capable of deceit, timid, and of muddy complexion.

(Note: The phlegmatic temperament is not mentioned in this poem.)

Matterer JL. A boke of gode cookery — regimen sanitatis salernitanum. 2001. Available from: www.godecookery.com/regimen/regimn14.htm

These expeditions led to widespread European colonisation of the Americas, and parts of Asia, Africa and Oceania. The 'New World' of the Americas provided a pharmacopoeia of medicinal plants new to the Europeans. Information about these discoveries was widely disseminated; for example, in 1577 an English translation of a Spanish herbal, Monardes' *Joyfull News from the Newe World*, became available.[12,13]

Culpeper

The trade in imported medicinal plants — and the prices they commanded — drew criticism from some herbalists who were sceptical of the need for new and expensive commodities. Throughout the writings of that most enduring of English herbal figures, Nicholas Culpeper (1616–54),[14] such criticism is evident. Abandoning his medical studies at Cambridge, Culpeper became apprenticed to an apothecary and fought for Cromwell in the English Civil War. He was committed to empowering his patients by sharing knowledge about local (English) medicinal plants. From his practice in central London he dismissed the use of new imported plants, arguing that they were being promoted in order to 'line the pockets' of the medical elites. In his view, local plants were not only easily available and cheap, but they were more than adequate to address local health problems. In his opinion 'a Man may preserve his Body in Health, or cure himself when sick, with such things only as grow in England, they being most fit for English constitutions'.[15] He had a colourful, productive and relatively short life, and although he died at the age of 38, his herbals have remained popular through the centuries.

The classification system that he popularised, ascribing qualities or 'degrees' of heating, cooling, moistening or drying, was based on humoral medicine and is described in Table 2.2. Although these concepts are no longer used to describe disease, some aspects remain useful in a modern understanding of herbal medicine. For example, spices are still considered hot, bitters and sedatives cooling, mucilages moistening and astringents drying.[15]

Western herbal medicine in the colonies

Colonisation led to an exchange of medicinal plants between Europe and its colonies. In the case of North America this process was clearly two-way. European

TABLE 2.2 Temperaments of herbal medicines

Hot	Examples of actions	Dry	Examples of actions
1st degree	To enhance sweating	1st degree	To strengthen
2nd degree	To open pores; clear obstructions	2nd degree	To bind
3rd degree	To inflame, cause fevers	3rd degree	To stop fluxes
4th degree	To cause inflammation, blisters (externally)	4th degree	To dry up radical moisture
Cold	**Examples of actions**	**Moist**	**Examples of actions**
1st degree	To cool	1st degree	To ease coughs
2nd degree	To abate fevers; refresh the spirits	2nd degree	To loosen the belly
3rd degree	To suppress perspiration	3rd degree	To make whole body watery and phlegmatic
4th degree	To stupefy the senses and ease pain	4th degree	Not possible

Source: Culpeper N. Culpeper's complete herbal. Ware, Herts: Wordsworth; 1653/1995.

medicinal plants were brought to the New World with the English colonists and cultivated by them in their 'dooryard gardens' of food and medicine. Indigenous medicinal plants were incorporated into this herbal tradition, albeit after some initial reluctance. This cross-fertilisation between European and native American medicinal plants provided the basis for the 19th century botanic medicine movements.[16]

A similar transfer of medicinal plant knowledge between Indigenous and non-Indigenous peoples in Australia is not evident. There are records of European medicinal plants being among the plants transported from England to Australia with the First Fleet and subsequent supply ships. In addition, a medicinal plant garden was established in the Rocks area of Sydney to 'provide the needs of Sydney General Hospital' within weeks of the arrival of the first Europeans. Some early medical practitioners showed an interest in local medicinal plants, and collected information about their use.[17] However, this interest did not result in the widespread use of indigenous plants as medicines, and very few Australian native plants will be found in the dispensaries of Australian practitioners today.

Rather the North American experience and use of plants indigenous to that continent is reflected in the development of the botanical medicine movements of the 18th and 19th centuries. It is this knowledge which was exported throughout the English-speaking world and consequently these plants are well represented in the dispensaries of contemporary practitioners of WHM.[18]

Thomsonianism

The early botanic medicine movement originated with the work of Samuel Thomson, who bridged the domestic and professional uses of herbal medicine, and promoted the use of local (North American) plants over imported ones.

Thomson developed a system of medicine based on herbal formulations to treat common health problems. He patented this system in 1813 and developed a highly successful business selling a year's worth of medical supplies to a family for $20. He also established a network of 'chapters' or support groups, where individuals could share the practical application of his ideas and medicines. In the pioneering society that was the US of the time, this approach to healthcare proved to be enormously successful in a situation where 'regular' medical treatment was not well regarded or trusted, and was often unavailable or unaffordable.

Thomson's system of medicine had clear links with humoral medicine, and could be followed by anyone, regardless of their level of education. His rationale for healing was based on stimulating the individual's vital force. He promoted a very simple idea that illness was largely to do with an excess of 'cold' which could be countered through the application of heat. This was achieved by the use of steam baths and the ingestion of 'heating' plants, especially cayenne. He also used emetics in order to 'cleanse' the body before treatment.

In the years following, these simple ideas were developed further by the physiomedicalists and Eclectics. Figures such as Alva Curtis and Wooster Beach in the US and Albert Coffin in the UK were influential in herbal medicine both politically and philosophically during the 19th century. They were among the leaders of a large group of herbal practitioners who provided medical care in the US and UK. These practitioners documented their work, including many case histories, in books and professional journals. This work remains a rich resource of clinical data available to herbal historians and scholars on the use of medicinal plant preparations in the treatment of a wide range of conditions, many of them serious and acute.

One of the continuing ideas expressed in these works is the importance of treating the vital force which regulates the body. Obstruction of the vital force was thought to cause cellular, organ or system dysfunction. Symptoms of disease were explained as expressions of the body's attempts to resolve problems facing the vital force. The greatest obstruction to it was the accumulation of metabolic wastes associated with poor elimination. The emphasis of treatment was on assisting the body to rid

itself of this 'toxic encumbrance', primarily through promoting diaphoresis (sweating), emesis and enemas ('purging and puking'). While the techniques may have changed, the emphasis on organ dysfunction and on toxicity as a potential contributing factor in disease can be seen in contemporary herbal practice (see Ch 1).

The botanic medicine movements of the 19th century flourished in what has been described as a period of 'free trade in physic', or 'medical sectarianism' where herbalists, homeopaths and 'regular' ('allopathic') practitioners and others practised freely. However, from the 1850s this freedom of practice began to be challenged, as allopathic practitioners and their supporters began to introduce legislation to advantage them over those who practised herbal medicine and homeopathy.[16,18–21]

These attempts to professionalise medicine took place over half a century and were eventually highly successful. They resulted in the medical profession developing 'one of the most privileged, autonomous positions in the marketplace in the contemporary Anglo-American context'.[20] As a consequence of this privilege, other approaches to medicine, including herbal medicine, became marginalised. Interestingly, it was in this climate that the new discipline, naturopathy, was developed at the dawn of the 20th century.

This marginalisation was challenged in the 1960s and 1970s with the development of the counter-culture. The re-emergence of herbal medicine at this time was and continues to be consumer-led and has occurred despite the initial opposition of both the state and the medical profession.[20,22] Commercial interests have been quick to recognise the opportunities this new field offered, as the burgeoning markets in over-the-counter remedies attest.

MODERN PRACTICE

Modern Australian herbal medicine, similar to its European and North American counterparts, is largely founded on the Anglo-Thomsonian model as described above and the philosophies of Hippocrates and his successors. Humoral theory, doctrine of signatures, planetary influences and vital force are all aspects of herbal medicine that have influenced its past practices and the ways in which practitioners have traditionally understood the activity of these plants.

However, in recent decades WHM has become more and more firmly rooted in biomedical disease concepts that are based on scientific principles and research. These principles can be seen when reading influential books by authors such as Simon Mills, Kerry Bone, Rudolf Fritz Weiss, and others.

Many traditional concepts are not accepted by, and may be incompatible with, contemporary scientific understandings. At the same time, public popularity of herbal medicine arises from a perception that herbalists offer 'something different'.[23] Consequently, WHM is in a philosophical dilemma. On the one hand, we are indebted to our ancestral herbal forefathers for our distinctive approach which is being demanded by the public. On the other hand, we try to fit our knowledge and practice into the prevailing scientific worldview.

The way out of the dilemma has been to adopt a biopsychosocial system which is based on current scientific knowledge and rationale, while also considering holistic aspects including the social, environmental, spiritual, psychological, cultural and economic aspects of a person.

The following principles are founded on the action-based method and principles advocated by a number of key figures within WHM.

CURRENT WESTERN HERBAL MEDICINE — PHILOSOPHICAL PRINCIPLES

Western herbal medicine is based on the concept that a normal human body is free of disease and capable of resisting disease and maintaining homeostasis.

In the physiomedical tradition the following three principles are fundamental and are still in place today:

1. A belief in a vital force that underlies all living organisms. It is this force that unifies all living organisms and is responsible for restoration and preservation of health.
2. A holistic philosophical framework that believes in treating individuals within the wider framework of their emotional, social, economic, spiritual and cultural aspects.
3. The principle of 'do no harm' — specifically the use of non-toxic medicines.

Individualised and holistic treatment

These naturopathic approaches are based on a belief that every person is unique; thus diagnosis and treatment of ailments is always individualised. No-one is ever in perfect health and each person has their own individual limitations on their potential for good health. Or, to put it another way, each person has areas of weakness that require support to enable them (or, more particularly, their organs) to function optimally within their limits. The task of the herbalist is to assess and enable each person's potential. Diagnosis is based on assessment of the individual's vitality and their level of toxic encumbrance.

This model for understanding health and disease has similarities with other traditional health systems which also classify people into constitutional types and which understand disease states as springing from excesses or deficiencies of substances considered elemental within these traditions. Traditional Chinese medicine, for example, includes concepts such as *qi* (vitality), *yin* and *yang*, and five elements of wood, fire, earth, metal and water. The Indian Ayurvedic tradition describes *prana* (energy), and three constitutional types of *kapha* (water and earth), *pitta* (fire and water) and *vata* (air). Causes and classification of diseases, qualities of different foods and herbal medicines, and broader cosmology are all explained by complex interactions of these elements, influences and forces. Diagnosis and holistic treatments are individualised within these frameworks.

Individualisation of diagnosis and holistic treatment are also central to contemporary approaches to Western herbal medicine. Treating people, rather than diseases, and assessing the cause of health problems in a way that incorporates the whole picture of a person, are key aspects of the naturopathic paradigm. It is useful to have classificatory models, such as theories of the elements, to understand temperaments of both people and herbs. Such frameworks enable practitioners to distinguish between possible treatments, and promote accurate and appropriate prescribing of herbal medicines.

Contemporary Western herbalism still aims primarily to stimulate vitality. This is achieved through addressing four key aspects essential to healthy functioning: enhancing digestion and assimilation of nutrients, encouraging elimination of metabolic wastes, ensuring adequate circulation (of blood to provide nutrients to all cells, and lymph to carry away wastes), and enervating nerve supply. Addressing these fundamental physiological functions enhances vitality by providing an environment that maximises the body's innate healing capacity. Treatment regimens are individualised, holistic and natural (herbs, foods, fasting, rest, sweating, massage, exercise) and without side effects. Ideally, attention is focused on correcting functional disturbances before they cause more structural change and deteriorate into chronic problems.

TRADITION AND SCIENCE

The enduring nature of herbal practice demonstrates its ability to adapt to change. Any tradition needs to maintain contemporary relevance in order to survive. Herbals from different historical periods demonstrate how herbalists reflect contemporary understandings of health and disease in their descriptions of the medicinal actions of the herbs. The concepts they use in their descriptions demonstrate these understandings. Box 2.2 details the challenges of the transmission of traditional knowledge.

A challenge for maintaining contemporary relevance is to decide which aspects of a tradition are central to the tradition and should be retained, and which aspects should be reinterpreted or discarded.

These challenges face the 21st century practitioners of WHM. The way that Western societies understand the world around them is firmly based in the scientific method. Therefore an adaptation required of contemporary herbalists is to reassess and reinterpret traditional understandings in light of current science.

BOX 2.2 Herbals

A herbal is a book which describes the uses of individual medicinal plants. Herbals document the uses of herbs in particular eras. 'Reading the old herbals' has been the major source of transmission of herbal knowledge in WHM and they are a major source of what is generally understood by herbalists to be 'traditional knowledge'. Herbals are often associated with a particular person, for example *Culpeper's Complete Herbal* by Nicholas Culpeper.

However, herbals are informed by practical use and they need to be read in their own specific historical context. They contain a lot of assumed knowledge. Some of this is knowledge which was general knowledge at that time — for example, Culpeper does not include a description of barberry (*Berberis vulgaris*) in his herbal because '*This shrub is so well known by every boy or girl that has attained to the age of seven years, that it needs no description*'. While this knowledge may have been common in 17th century London, few children or adults among his current readers have such knowledge.

This means that the interpretation of herbals from specific historical periods requires specialist understanding — ideally from those who have not only an understanding of the period in question, but also a detailed understanding of the ways that herbalists use plants. The historian Anne Van Ardsdall suggests that we think about herbals as abbreviated texts, or notes for practitioners that must be read with the understanding that they are built upon years of apprenticeship. As she says:

> *The texts make sense because an unwritten text can be assumed to lie between each line of written text: that unwritten text is the voice of the teacher and the memory of the apprentice healer, neither of which we can hear.*
>
> Van Arsdall 2014

Another historian, John Riddle, gives an example of the mistakes and omissions that can occur when researchers depend only on the written record, without an understanding of the assumed knowledge of the underpinning practice. In his research on the historical use of contraceptives, he found many references to the use of the seeds of Queen Anne's lace (*Daucus carota*) for this purpose in some cultures. However, it was only after many years of historical research, and after a conversation with a herbalist, that he learned that the seeds should be crushed, This brings home the limitations of the written record. For if the seeds were swallowed whole,

> *they go through the alimentary canal without absorption, or, in other words, 'they go right through you' … Nothing in the historical sources specified this critical piece of information. Experienced herbalists may know instinctively to crush the seeds. It makes me all the more aware that medical writings themselves were not sufficient to explain the continuous use of natural products over many centuries. By and large the information about these drugs has been transmitted orally.*

Culpeper N. Culpeper's complete herbal. Ware, Herts: Wordsworth; 1653/1995; Riddle J. Eve's herbs: a history of contraception and abortion in the West. Cambridge, Mass: Harvard University Press; 1997; Van Arsdall A. Evaluating the content of medieval herbals. In Francia S, Stobart A, editors. Critical approaches to the history of Western herbal medicine. London: Bloomsbury; 2014.

The published research on herbs and their therapeutic actions, particularly regarding their pharmacological constituents, is ever increasing and often, but not always, empirical knowledge of herbal actions has been validated by scientific research. This is consistent with the well-cited finding that 74 of plant-derived compounds used in pharmaceuticals were used for similar uses by traditional healers.[24]

New actions and uses of herbal medicines have also been discovered. And further, while there has always been cross-cultural exchange of herbal medicines, scientific investigation of herbs from other cultural traditions has increased knowledge and accessibility of these herbs in the Western herbal tradition. The body of knowledge about herbal medicines continues to expand for the Western herbalist.

Scientific research into herbal medicines has evolved alongside a worldwide movement towards a stronger evidence base for health practices, linking research findings with clinical application (see, for example, Box 2.3 on evidence for the usefulness of St John's wort). Evidence-based medicine is increasingly valued by both practitioners and consumers and it is perceived to legitimise health practices.

BOX 2.3 Tradition and science — St John's wort

St John's wort is named for its red sap which in old Christian beliefs was connected with the blood and wounds of Jesus. It is a very good wound healer, especially as an infused oil applied topically to injuries and strains. It has affinity for the nerves and traditional uses include nerve injuries and nervous complaints, from physical conditions such as neuralgic pain (e.g. sciatica or shingles) to chronic nervous conditions such as restlessness, irritability, anxiety, depression and nervous debility.

Scientific research in the last decade has confirmed the usefulness of St John's wort for treating depression. Numerous clinical trials have found St John's wort as effective as SSRI drugs for the treatment of mild to moderate depression, but with fewer side effects. Mechanisms of action have been clarified as inhibition of synaptic reuptake of several neurotransmitters. The constituent largely responsible for these actions is hyperforin, although other constituents also support this activity. Scientific research has also discovered new actions and uses for St John's wort. For example, hyperforin and other constituents such as hypericin and pseudohypericin have demonstrated antiretroviral and antibacterial actions, and hypericin also has anticancer effects. St John's wort has demonstrated activity against herpes infection and has potential to reduce nicotine withdrawal and to contribute to the treatment of some cancers.

Combining traditional and scientific knowledge expands our knowledge base about actions and uses for St John's wort as well as confirming its efficacy and safety for traditional uses.

Braun L, Cohen M. Herbs and natural supplements: an evidence-based guide. 2nd edn. Sydney: Churchill Livingstone Elsevier; 2007.

Evidence-based approaches already have a strong foothold in the fields of pharmacy and medicine and are increasingly being applied to Western herbal medicines. There are a number of levels of evidence. In vitro studies explore pharmacological activity, usually of single active constituents, and help to scientifically explain mechanisms of action. In vitro studies can also give cause for speculation on new uses for herbal medicines. In vivo animal studies examine the practical application of herbs or their constituents and give some indication of their efficacy and dosage. Human clinical trials provide the most relevant information regarding application of herbal medicines, and randomised controlled studies are considered to provide the highest quality of evidence.

Evidence-based medicine does have some limitations. First, it is very expensive and time-consuming to conduct clinical trials. Scientific investigations of drugs and herbs tend to proceed only if there are foreseeable profits to be made. Patenting herbal medicines can be difficult as many herbs grow as weeds and grow in many parts of the world, so pharmaceutical companies are often not motivated to invest money in researching herbal medicines. Meanwhile herbal medicine manufacturers may not have the necessary infrastructure or resources to conduct their own research. Second, testing herbal medicines as they are used in clinical practice is not straightforward. Scientific investigation of drugs tends to focus on the mechanism of action of specific molecules or constituents. This may have limited clinical applicability in practice as herbs are usually prescribed in their whole form, in combination with other herbs, and alongside other treatments such as dietary changes or nutritional supplementation. Third, scientific research offers a particular type of information that may be applicable across populations but does not necessarily account for a herb's usefulness in individual cases. And last, the prioritising of scientific evidence means that those herbal medicines that do not have an evidence base are rejected as ineffective, rather than simply being viewed as unsubstantiated by clinical research.[25]

In summary, while evidence-based research usefully adds to the existing knowledge about herbal medicine, this kind of information should not necessarily be valued over and above traditional empirical knowledge. In the abovementioned example of St John's wort, it is valuable to have proven the efficacy and safety of St John's wort for treating depression through clinical investigation. However, depression is not the only nervous disorder for which St John's wort has traditionally been prescribed. By valuing scientific research over empirical evidence, other traditional uses for St John's wort, for example as a nerve tonic in the treatment of nervous debility, risk becoming undervalued and eventually lost. Emphasising evidence-based medicine changes the knowledge base completely and is causing shifts in the way herbal medicine is both taught and practised.[26]

Scientific exploration and an evidence base are important but they are not the only valid sources of knowledge about herbs. Accessing historical, empirical knowledge as well as scientific information provides a rich array of material about herbal medicine. Familiarity with both empirical and scientific understanding of herbal

medicines, using the vitalist approach, and focusing on the unique presentation of each individual, are all essential aspects of modern Western herbalism.

HERBAL ACTIONS AND CONSTITUENTS

Traditionally herbs have been classed according to their actions on the body and this has been a large component of empirical knowledge about herbal medicines. The ways in which herbalists have understood and described these actions has varied in different historical eras, depending on larger cultural influences of the times. For example, in Galen's time cosmological influences included both natural and supernatural forces and, among other uses, some herbal medicines offered protection against evil spirits. In Culpeper's era imbalances of humours were thought to cause diseases and astrological influences conferred particular activity on herbs. By the time of the physiomedicalists and the Eclectics herbs were classified according to effect on an organ or on tissue. And by the 20th century, the branch of pharmacology dealing with natural medicines and their constituents, pharmacognosy, had evolved as a scientific discipline.

Herbalists use whole extracts of herbs rather than isolated single constituents, not only because they believe that this provides most benefit and protects against unwanted side effects, but also because this is the basis of the way that they understand the action of the herbs which are their tools of trade.

Herbs contain hundreds of chemical constituents, some more pharmacologically active than others, and the development of the study of pharmacognosy has once again changed our understanding of how herbs work. The therapeutic actions of herbal medicines are due to one, or more usually some, of these active principals. Constituents can be classified by their chemical structure, and each class of compound has recognisable therapeutic actions. As plants contain many different kinds of compounds, they usually have multiple actions. This may include protective actions (for example, one constituent may be toxic, another protective) or synergistic actions (constituents that enhance the activity of other constituents). What follows is merely a brief description of some of the major constituent classes of herbal medicines and some examples of herbal medicines containing these compounds.[27,28]

Carbohydrates

Carbohydrates form a large class of compounds which includes the gums and mucilages (examples include *Linum* spp., *Plantago psyllium* and *Ulmus fulva*) that are strongly hydrophilic (absorb moisture) and thus make useful bulking laxatives. Pectin is another carbohydrate found in many fruits and is used medicinally to absorb toxins and encourage elimination through the bowels. The gums, mucilages and pectin are cleansing and soothing to mucous membranes. The branched long-chain polysaccharides are very important compounds in herbal medicine as their main action is immune-modulating. Herbs containing these constituents include *Eleuthrococcus senticosus*, *Astragalus membranaceus*, *Echinacea* spp., *Chlorella*, and shiitake and reishi mushrooms.

Glycosides

Glycosides are sugar ethers composed of a sugar (usually glucose) component, the glycone, and a non-sugar component, the aglycone. This is a large and diverse class of constituents with a variety of therapeutic roles in herbal remedies, including:

- Anthraquinone glycosides have an osmotic effect in the large intestine causing a laxative action. Examples include *Aloe vera*, *Rhamnus purshiana* and *Cassia senna*.
- Saponin glycosides (discussed further under sterols) have a bitter, acrid taste and are often irritating to mucous membranes.
- Cyanogenic glycosides, used as flavouring agents, nervines and anti-carcinogens. Laetrile and amygdalin, found in apricot kernels, are examples of cyanogenic glycosides; however, they are too toxic to be used as medicine. Prunasin (found in *Prunus serotina* and *Prunus amygdalus*), which converts to hydrocyanic acid, can be extremely poisonous but in small quantities is an excellent expectorant.
- Isothiocyanate glycosides, found in the seeds of many cruciferous plants. These cause local vasodilation and can be used therapeutically as counter-irritants to loosen phlegm in bronchial or sinus areas. Examples include mustard (*Brassica nigra*), horseradish (*Armoracia rusticana*) and nasturtium (*Tropaeolum majus*).
- Cardiac glycosides which have powerful effects on the heart, increasing the force of systolic contractions. Traditionally herbs containing these constituents (such as *Convallaria majalis*, *Digitalis purpurea*, *Urginea scilla*) were used to treat congestive heart failure, but as these herbs have a very low therapeutic index they are considered unsafe and are no longer available to naturopaths to use therapeutically.
- Iridoid glycosides which are monoterpenoids and give herbs their bitter principle. Bitters stimulate digestive secretions from stomach, pancreas and liver. Bitter herbs include *Gentiana lutea*, *Andrographis paniculata* and *Artemisia absinthium*.

Flavonoids

Flavonoids are plant pigments that give flowers, fruits and berries their colour. Examples such as quercetin, rutin and bioflavonoids (e.g. hesperidin) are found in citrus fruit, rosehips and green peppers and act to strengthen and tone capillaries. Other types of flavonoids include flavones, flavonols, isoflavones and flavins, which are anti-inflammatory, anti-allergic, antiviral and antioxidant (e.g. *Silybum marianum*, *Crataegus oxycantha*, *Ginkgo biloba* and *Scutellaria baicalensis*).

Phenols

Phenols are one of the largest group of chemical components in plants and have a variety of physiological

effects. The simple phenols include salicylates and salicins (such as found in *Filipendula ulmaria* and *Salix alba*) which convert to salicylic acid in the body and have analgesic, antipyretic (reducing fever) and anti-inflammatory effects:

- Phenylpropanoids, which may also be glycosides, include cynarin (found in *Cynara scolymus*) which is hepatoprotective and hypocholesterolaemic, and curcumin (found in *Curcuma longa*), also hepatoprotective as well as anti-inflammatory and hypotensive.
- Lignans are common phenolic compounds found in grains (for example linseed or flaxseed) and pulses (especially soybean). They have phyto-oestrogenic (phytosterolic) properties and can also be antioxidant and anti-carcinogenic. Herbal examples include *Schisandra chinensis* and *Silybum marianum*.
- Coumarins commonly have mild anticoagulant, antimicrobial or antispasmodic effects. Herbal examples include *Aesculus hippocastanum, Angelica archangelica* and *Medicago sativa*.
- Quinones can have significant antioxidant, antimicrobial and antifungal effects (for example *Drosera rotundifolia, Juglans cinerera, Tabebuia avellanedae*), a subset, the anthraquinones, have laxative effects (for example *Rumex crispus* and *Rhamnus purshiana*).
- Tannins are also polyphenolic compounds, discussed below.

Tannins

Tannins form a very large and complex group of substances made from phenolic acid and found in isolated parts of plants such as unripe fruit, bark, leaves or stems. Tannins have an astringent action and are used for treating diarrhoea and topically for skin abrasions. Examples include *Agrimonia eupatoria, Geranium maculatum* and *Hamamelis virginiana*.

Oils

This class of compounds includes volatile (essential) oils and fixed oils (lipids). Essential oils are the component that gives plants their scent and they have been used therapeutically for thousands of years. They have a complex chemistry but are mainly terpenes and terpenoids (see below). They are very potent and not usually used internally as isolated compounds. The ketone volatile oils, for example, can be neurotoxic internally. However, in whole herbs the volatile components are generally safe and have a great variety of effects, from antiseptic to expectorant to spasmolytic. Some examples of herbs with reasonably high levels of volatile oils include *Apium graveolens, Mentha x piperita* and *Rosmarinus officinalis*.

The fixed oils are completely different chemical compounds and include the essential fatty acids, which are an essential component of cell membranes and regulate inflammation and cholesterol. Plant sources of essential fatty acids include borage (*Borago officinalis*) and evening primrose (*Oenothera biennis*).

Resins

Resins are a more concentrated form of volatile oil, exerting antimicrobial, astringent and anti-inflammatory properties. Herbal examples include *Boswellia serrulata, Calendula officinalis* and *Commiphora molmol.*

Terpenes

These compounds are commonly found in medicinal herbs, with varying effects depending on their level of chemical complexity. The monoterpenes are the major class of chemical compounds found in essential oils (e.g. *Eucalyptus* spp. and *Pinus* spp.) and the iridoid glycosides. The diterpenes are the most bitter of all terpenoid compounds (e.g. in *Marrubium vulgare*) and are commonly in Lamiaceae family herbs (e.g. *Salvia officinalis*) and can have pronounced activity (e.g. vasodilatory, hypotensive, bronchodilatory effects of *Coleus forskohlii*, and antimitotic activity of *Taxus baccata*). The sesquiterpenes are found in the essential oil component of plants and are, for example, responsible for the blue colour of chamazulene essential oil in *Chamomilla recutita*. Sesquiterpene lactones are bitter and are characteristic of Asteraceae family plants (e.g. *Achillea millefolium, Arnica montana* and *Artemisia* spp.), where they are known to commonly cause contact dermatitis.

Sterols and saponins

Phytosterols are tetracyclic triterpenoids and include the saponin glycosides which are characterised by producing a lather in water. Phytosterols contain precursors to cortisone (steroidal sapogenins) and are found in *Aesculus hippocastanum, Bupleurum falcatum, Dioscorea villosa, Glycyrrhiza glabra* and *Withania somnifera*.

Alkaloids

Alkaloids are nitrogen-containing compounds and form one of the most diverse and complex group of chemicals found in plants. Alkaloids are usually highly active pharmacologically as they can cross the blood–brain barrier and depress or stimulate the central nervous system and interact with neurotransmitter receptors.[29] Many alkaloid-containing herbs cause adverse reactions or are toxic, thus many are on the poisons schedule and are not available for use by herbalists. Examples of alkaloids include caffeine, nicotine, morphine and cocaine. The different types of alkaloids include:

- Xanthine alkaloids are mild stimulants and can temporarily raise blood pressure; examples include caffeine and theobromine, found in tea, coffee and chocolate.
- Pyrrolizidine alkaloids are toxic in large doses; examples include nicotine (in tobacco, *Nicotiana tabacum*) and senecionine in comfrey (*Symphytum officinalis*).
- Tropane alkaloids activate the central nervous system and paralyse the peripheral nervous system, and have been used ritually to alter states of consciousness. Hyoscyamine, hyoscine and scopolamine are all tropane alkaloids that are found in deadly nightshade (*Atropa*

belladonna), thornapple (*Datura stramonium*) and henbane (*Hyocyamus niger*). These herbs have a history of medicinal use for their anticholinergic and antispasmodic actions. However, they are toxic even in low doses and their effects are cumulative as the alkaloids are not well excreted.[27] As herbs containing these alkaloids can cause respiratory and circulatory failure (and death) they are not available for use by herbalists today.

- Indole alkaloids, including vincristine and vinblastine (from the herb *Catharanthus roseus*), have been isolated for use as chemotherapeutic agents in the treatment of leukaemia and Hodgkin's lymphoma. However, they have major side effects and can only be prescribed by medical practitioners.[30] Another herb scheduled due to its powerful effects, notably on the central nervous system, is *Rauwolfia serpentina*, as its alkaloid reserpine has toxic side effects.
- Phenylalkylamine alkaloids include ephedrine, found in *Ephedra sinica*, which acts as a central nervous system stimulant.
- Quinoline alkaloids include quinine (from *Cinchona* spp.), used to treat malaria. Isoquinoline alkaloids exert sedative and analgesic properties and are found in *Corydalis cava* and *Eschscholzia californica*; more potent examples are morphine and codeine (both found in the opium poppy, *Papaver somniferum*). Other examples of isoquinoline alkaloids include berberine and hydrastine, which are strongly antimicrobial and found in *Berberis* spp. and *Hydrastis canadensis*.

Herbal medicines are prescribed according to their known effects or actions. These effects may be understood through empirical knowledge or through evidence provided by the study of pharmacognosy (Box 2.4). Both sources of knowledge have validity and relevance to the modern practice of WHM. There are complex interactions and synergy between the multiple constituents of each herbal medicine and supposition of activity based on chemical analysis needs to be balanced with demonstrated clinical usefulness.

BOX 2.4 Different approaches — traditional and scientific

An example of different approaches to the application of herbal medicines is *Echinacea* spp.: its historical use by native Americans for the treatment of snakebites; and its properties as a stimulating alterative lymphatic blood cleanser by physiomedicalists. It is specifically used to treat acute toxic conditions and as part of the naturopathic approach to the treatment of chronic infective conditions.

Modern science supports this knowledge but from a different perspective. Research demonstrates that different chemical constituents of *Echinacea* stimulate immune activity in humans in various ways: nonspecific cellular immunity, macrophage, leucocyte and natural-killer cell activation, antiviral, antifungal and anti-inflammatory actions. Science thus supports the use of *Echinacea* in the treatment of both acute and chronic infections.

Bartram T. Encyclopedia of herbal medicine. Christchurch, Dorset: Grace Publishers; 1995; Braun L, Cohen M. Herbs and natural supplements: an evidence-based guide. 2nd edn. Sydney: Churchill Livingstone Elsevier; 2007.

SAFETY AND INTERACTIONS

Empirical knowledge of plants and their actions forms the basis of herbal medicine. This includes knowledge of herbal indications, contraindications, dosage and safety issues and is based on generations of clinical experience and observation in both oral and written forms. However, herbs are now being used in new forms and concentrations which require reassessment of traditional understandings. In the last few decades in particular there has also been much scientific investigation of efficacy and safety of many herbal medicines. With the increasing popularity of herbal medicine use in Australia, it is particularly important to understand and clarify issues around the safety of herbal medicines and the interactions between herbs and drugs (Box 2.5).

Interactions between herbal medicines and drugs will become increasingly important to assess as stronger and more refined herbal medicines are produced. There are a number of sources of information regarding the safety of herbal medicines;[25,29] however, many popular herbs have not been scientifically studied. No evidence of safety does not mean that herbs are unsafe, but rather that no scientific investigation has confirmed safety.

BOX 2.5 A case of herbal medicine safety

The importance of investigating the safety of herbal medicines can be demonstrated in the case of black cohosh (*Cimicifuga racemosa*). Black cohosh is used extensively for the treatment of menopausal symptoms and its efficacy for this purpose has been well established in multiple clinical trials. However, there have been reports of serious adverse events and concerns about its use in pregnancy and in women with breast cancer. Recent systematic analyses have demonstrated, however, that black cohosh is generally safe to use. As a precautionary measure, it is recommended that black cohosh be avoided in the first trimester of pregnancy (which empirical information sources also suggest). Preliminary investigation of the mechanism of action of black cohosh also leads to speculation that black cohosh may have a beneficial interaction with anticancer treatments such as tamoxifen, and thus women on these medications may require lower doses.

It has been important to explore and understand the mechanisms of action of black cohosh and to rigorously test its safety for women in vulnerable and complex situations. A positive outcome has been the discovery that in fact this herb may enhance the action of anticancer treatments in women with breast cancer.

Braun L, Cohen M. Herbs and natural supplements: an evidence-based guide. 2nd edn. Sydney: Churchill Livingstone Elsevier; 2007.

Safety in pregnancy

The issue of the safety of herbal medicines is particularly fraught when it comes to treating women during pregnancy or lactation. Concerns for the viability of the pregnancy and the health of the fetus need to be foremost in the herbalist's mind. Avoiding herbs that may be toxic to mother or child, teratogenic substances (that may cause fetal abnormalities) or herbs that stimulate the uterus (and may cause miscarriage) is essential. Proving safety of herbal medicines for pregnant or lactating women is a vexed proposition, as it is for all medicines, as it is unethical to conduct research on this population. Empirical evidence suggests that only a small number of herbs are contraindicated in pregnancy and during lactation, but there has been very little scientific research supporting (or negating) this knowledge. There is speculation about the safety of many — some would say any — herbs in pregnancy, usually based on understandings of individual pharmacological constituents of herbs and their bioactivity. This has led to much conflicting advice in the literature. Common practice in this situation is to rely on data from empirical sources of evidence and animal studies.

There is a general consensus that it is best to avoid or minimise the use of internal herbal treatments in the first trimester of pregnancy, as this is the time of greatest embryonic development. This includes using caution when treating women who are trying to conceive. Exceptions to this rule are treating health issues particular to this period of time, such as threatened miscarriage or nausea ('morning sickness').

It is generally agreed that all toxic herbs (e.g. *Phytolacca decandra*) should be avoided throughout pregnancy and lactation. This stipulation also includes concentrated essential oil extracts (taken internally) and large doses of laxative herbs, especially those containing anthraquinone glycosides.

Some herbs that are contraindicated in pregnancy, such as uterine stimulants, may be usefully employed in the last 6 weeks of pregnancy to prepare for labour. A full discussion can be found in Chapter 18.

Historical note

The use of herbal medicine during pregnancy was discussed by John Scudder in 1898:

> *The state of the uterine system too must not be overlooked, for the periods of menstruation, pregnancy and lactation are attended with peculiarities in relation to the action of medicines. Thus the employment of aloëtic and drastic purgatives must be suspended during the catamenia and period of pregnancy; agents likewise which exert any powerful influence upon the system should not be administered at these times. Agents which are absorbed and communicate injurious properties to the blood, should be avoided during pregnancy and lactation; so too should all cathartic or other medicines which communicate their properties to the milk of the mother, while she is nursing.*[31]

Potential interactions

Through scientific endeavour knowledge of interactions, both herb–herb and herb–drug, has steadily evolved over the last few decades. Interactions can be either positive (beneficial) or negative (adverse) and may be mild, moderate or severe. An example of a negative herb–herb interaction is combining tannins with alkaloids as the tannins form complexes and precipitates and inhibit absorption. Other herb–herb interactions may be beneficial, such as saponins enhancing lipid solubility. Traditional herbal prescribing using a combination of herbs in a formula relies on positive herb–herb interactions as a way of enhancing particular herbal actions within a formula.

Herb–drug interactions can similarly be either mild or severe, positive or negative. In-depth knowledge of pharmacokinetics and pharmacodynamics allows for better understanding of the potential for interactions; however, much is still speculative as there have not been enough clinical studies conducted to confirm outcomes of many herb–drug combination therapies. Those drugs with a narrow therapeutic index, such as digoxin and warfarin, warrant special attention when it comes to their potential to interact with herbs or other drugs, as small changes to any aspect of their pharmacokinetic properties can have serious consequences.

PRINCIPLES OF HERBAL TREATMENT

The contemporary Western herbalist considers the historical principles of herbal treatment and the naturopathic approach combined with the best modern science has to offer. A good grounding in the naturopathic paradigm, empirical knowledge and the latest scientific research, a thorough understanding of herbal actions and herbal pharmacognosy and up-to-date expertise on issues of interactions and herbal safety, are all essential components of knowledge for professional herbalists today.

FORMULATING A HERBAL PRESCRIPTION

Herbal treatment usually involves a multifaceted approach and a combination of different herbs in a coordinated prescription or formula. While in some situations it may be appropriate to use 'simples', that is prescription of only one herb usually given in drop doses (see below), more commonly illnesses and their causes are complex and a more sophisticated approach is required. This takes some thought and planning and, of course, sound knowledge of herbal materia medica.

The following is a systematic approach to arrive at an individual prescription:

- Patient presents with condition(s)
- Practitioner takes a case history, physical examination, laboratory investigations and (if applicable) traditional evaluation (e.g. iris diagnosis, pulse diagnosis)

- All the gained information is condensed into a diagnosis (or provisional diagnosis if there is not enough information to come up with a definitive diagnosis)
- Practitioner considers probable underlying causes
- Practitioner decides on a final diagnosis and treatment approach
- Other medical and non-medical treatments as well as current pharmacological treatments are considered
- Holistic aspects including social, cultural, environmental, economic and spiritual are considered
- Final treatment and management plan is developed.

Case taking and diagnosis

To attain the desired outcome of recovery from illness, correct diagnosis in the first instance is essential. Once the patient's history has been attained, a therapeutic strategy can be devised with clear aims. Individualising aetiology complicates the process of diagnosis because establishing the underlying causes of illness is often not straightforward. Where in conventional medicine diagnostics are increasingly technical, relying on laboratory tests or the use of sophisticated equipment, naturopathic diagnosis relies heavily on detailed case taking. However, the medical diagnosis does not need to be as precise (and often cannot be) as is the case in orthodox practice. We are often dealing with functional disorders rather than pathologies. This is not to say that we cannot manage a patient's pathology; it merely emphasises the fact that many of our clients fall into the medical 'too hard basket'. For example, the patient has consulted a medical doctor for a range of symptoms, has undertaken several pathological investigations which have returned negative, and therefore, according to the current medical viewpoint, because there is no pathology the patient is well. However, the patient is clearly unwell and suffers several debilitating functional problems such as nausea in the morning, low appetite, aching lower back and extreme fatigue. Obviously the patient's metabolism is not functioning as it should; however, it has not yet progressed to a pathological state. The range of tests has demonstrated this and so a medical system that relies almost exclusively on medical tests would view this patient as well and thus belonging in the medical 'too hard basket'. However, as holistic practitioners we recognise dysfunction and prescribe remedies to correct dysfunction; and good case taking will usually provide enough information to indicate how this person ended up with their symptoms.

Case taking

When taking a case, questions about each body system are asked to determine other health issues that may be impacting on the initial concern or that need to be considered overall. This is consistent with the paradigm of holistic practice. Questions on sleep, mood, energy levels and ability to recover from illness help the herbalist to assess the patient's vitality. Personal and family medical histories are useful indicators to potential areas of weakness (for example, a family history of hypertension might lead the herbalist to pay particular attention to function of the heart, kidneys and nervous system). Details of diet and other lifestyle factors such as exercise and stressors provide information on nutritional deficiencies or excesses and other adverse influences on health. Physical examinations are another source of information and an opportunity to both assess and reassure the patient through touch. Iridology provides insight into a patient's constitution and areas of weakness, tension or 'toxicity'.

Diagnosis

Diagnosis for the modern herbalist should contain elements of both medical and naturopathic frameworks. This means that the herbalist needs to have knowledge of pathology and also of naturopathic philosophy. Take endometriosis as an example. This is a medical diagnosis, confirmed on laparoscopy (a surgical procedure), and is usually treated surgically and/or hormonally. The herbalist, however, would view this as a condition of pelvic congestion and differentiate between the need to cleanse, relax or tonify the pelvic region according to other signs and symptoms in the individual patient. An understanding of the physiological and pathological mechanisms is essential, especially given the implications for fertility. But herbalists also need to recognise what is unique about what they have to offer for the treatment and prevention of this disorder. Understanding the medical framework is important, especially in order to effectively communicate with other medical personnel; however, herbalists need to frame diagnosis and focus treatment within the naturopathic paradigm. Working alongside other health professionals, such as doctors, is often of great benefit for patients.

Therapeutic strategy

The therapeutic strategy of the Western herbal medicine practitioner focuses on the concept that the human body, when in a state of optimal health, has the ability to resist disease and heal itself of common ailments, and maintain homoeostasis. The concept of enhancing or compensating physiological functions within the patient is essential to ensuring a holistic therapeutic strategy enabling both short- and long-term patient health outcomes to be addressed. It is important that the more traditional approach of enhancement is used simultaneously with the more allopathic strategy of compensation.

ENHANCING STRATEGIES

By enhancing normal physiological processes, individuals have the greatest opportunity to prevent and fight disease and maintain good health, as evidenced in the metaphor about attending to the soil to nourish the seed, so that it grows into a strong plant and is more resistant to disease. Similarly the concept of enhancing a patient's own bodily functions can ensure that their inherent healing ability can be enhanced. This concept draws on the traditional idea of 'vitality' or the innate energy of a person, and seeks to enhance this through physiological means. This may involve correcting underlying disharmony within the patient, by balancing areas of over- or under-stimulation. Of particular importance in this strategy is the use of

tonifying, adaptogenic and trophorestorative herbs. One of the prime differences between conventional and naturopathic medicine is that the former looks for common causes of a given illness in different people (e.g. a pathogen), while the latter looks for unique causes in different individuals (e.g. the cause of the immune system's inability to fight off infection). Where medicine focuses its attempts on killing the pathogen (e.g. with antibiotics), naturopathy focuses on enhancing the individual's innate ability to fight the infection (e.g. boosting vitality). It is vital that the modern Western herbal medicine practitioner continues to focus on using enhancing strategies when composing a treatment plan.

COMPENSATION STRATEGIES

The use of herbs in a direct compensatory function can ensure that the symptomatic complaints of a patient are promptly addressed, while the aforementioned enhancing strategies work on the underlying cause(s). A wide range of bodily functions can be directly enhanced by the use of herbal medicines. Herbal subgroups commonly starting with 'anti' are a good example of this, such as anti-inflammatory, antibacterial, antiviral or anti-allergic.[32] These herbs assist the patient by doing the job for them. Herbs that act directly on hormonal cascades or organ function without also tonifying or restoring them also fall into this category (e.g. sedative herbs).

CASE STUDY

John, aged 40, presented with symptoms of a mild head cold, complicated by swollen and painful glands in the neck and throat area. He complained that he developed these symptoms every few weeks. Case taking revealed that 12 months previously John had glandular fever and had only taken a couple of days off before 'soldiering on' back to work full-time. He admitted to feeling tired and run down since then.

Clearly John's recurring acute symptoms stemmed from his unresolved glandular fever, and his lymphatic (glandular) and immune systems were compromised. The herbalist gave priority to the treatment of John's immediate symptoms (compensation strategies) and encouraged him to take time off work 'as if he had the glandular fever now', to allow for a more complete recovery. A herbal formula and dietary advice were dispensed.

In the longer term the herbalist made plans to cleanse and strengthen John's lymphatic system and to build up his vitality (enhancement strategies). In this way John would be better able to fight off any infections and eventually prevent them from recurring at all.

Treatment aims and strategy

Devising a therapeutic strategy is at the heart of treatment of any illness. The strategy needs to be clearly and consciously designed and appropriate to both the management of the illness and the circumstances of the patient.

There are a number of steps along the way, each involving skills and knowledge. Of fundamental importance to the herbalist is a thorough understanding of pathophysiology, naturopathic philosophy, herbal materia medica and sources of good nutrition. Some knowledge of other related fields is also helpful, such as botany, iridology, nutritional medicine and mineral therapies. These are all building blocks of knowledge necessary for the contemporary professional herbalist. Other skills help to make a well-rounded practitioner: an understanding of human psychology, reasonable counselling skills, a calm disposition and a clear mind will all help the practitioner to focus and the patient to feel heard. This fosters a positive therapeutic relationship, which is essential to deep healing.

Notwithstanding the importance of seeking and treating underlying causes of illness, it is also imperative that patients get symptomatic relief from any pain or discomfort. Determining priorities of treatment should occur early on in the consultation and acute problems need to be given first priority. Acute illnesses are usually expressed as sudden onset of marked symptoms, often accompanied by fever, and often short-lived. Giving priority to the treatment of acute illnesses is important for a number of reasons. First, because they are usually uncomfortable and demanding of immediate attention. Second, acute problems can also indicate 'fault lines' or areas of weakness that need to be strengthened to prevent more serious problems in the long term. Third, good resolution of acute illnesses is very important to prevent problems being driven deeper into the body where over time they may become more chronic. And finally, it is important to focus on acute treatment and not address chronic conditions in the acute state.

Historical note

The following paragraph was written by the Eclectic physician Eli Jones in 1911 and is highly relevant to the modern practitioner:

> *An old gentleman had a sick child and called a doctor, who examined the child about as described above and then began to prepare the medicine. The father asked, 'What ailed the child?' The doctor replied, 'Oh, it's a little cold and some fever.' The old gentleman said, 'Doctor, I will pay you for the visit but you need not leave any medicine.' The second doctor came and examined the child in about the same manner and his diagnosis was as indefinite as the other. He was not allowed to leave any medicine for the child. The third doctor came; he examined the child and then began to prepare the medicine. The father said, 'What ails the child, doctor?' 'Why it's measles, any fool ought to know that,' was the doctor's answer. 'All right, doctor, you may prescribe for the child.' The old gentleman was sensible. No doctor should be allowed to give a dose of medicine unless he can give an intelligent reason why he gives it, what he gives it for, and what he expects it to do.*

Once causes of illness have been established, the next step is to decide what treatments are needed to rectify the situation. This step can be usefully compartmentalised into short- and long-term treatment aims. In the short term priority should be given to relief of symptoms and the processes of cleansing, tonifying, stimulating or relaxing should begin. In the longer term lifestyle factors such as diet, exercise and stress management are particularly needed to address imbalances. Once the herbal practitioner has clarified what needs to be achieved in the short term, appropriate herbal actions can be determined immediately.

Approaches to treatment using herbal medicines are either traditional or scientific. The traditional approach focuses on herbal actions and the scientific approach focuses on active constituents. Many herbalists use a combination of both understandings of herbal medicines in their treatment of patients.

CASE STUDY

Using the case study above we can use different approaches to herbal treatment. The herbalist planned to cleanse and strengthen John's lymphatic system and to build up his vitality. Using a traditional interpretation, the following herbal actions could be considered appropriate: lymphatic alterative, immune stimulant, antiviral/antimicrobial, trophorestorative, tonic. The scientific approach, focusing on active constituents, may look to use herbs containing long-chain polysaccharides to stimulate aspects of the immune system, flavonoids for their antiviral and anti-inflammatory properties, resins for their anti-inflammatory, astringent and antimicrobial properties and phytosterols for their tonic properties.

HERBAL ACTIONS

Choosing herbal actions can be based either on traditional understandings of herbal materia medica, or on knowledge of active constituents of herbs and the physiological effects they have. What is most important is to match desired herbal actions to treatment aims. Using the case study cited above, the herbalist's aim in the short term was to treat John 'as if he had the glandular fever now'. This would entail initiating treatment of an acute viral illness. Diaphoretic teas or therapeutic baths could be used to stimulate perspiration and promote proper resolution of fever. As this is a debilitating state, bedrest would be essential. Enhancing immune function through prescription of antiviral, immune-stimulating and lymphatic cleansing herbs would also be appropriate actions at this initial stage of treatment. This approach of cleansing, resting and supporting the body's natural defence mechanisms allows for more complete recuperation from the acute phase of the illness. As glandular fever can have long-term consequences, follow-up treatment, especially the use of herbal tonics, is essential. A 'clean' diet and plenty of bedrest are also important components of long-term treatment. Alternating acute treatment strategies whenever acute symptoms return, followed by some weeks of restorative herbal tonics between bouts of infection, will ensure complete resolution of the glandular fever symptoms and the underlying viral overload. This protocol will ensure that vitality is gradually restored and the patient will become more robust and energetic, and more able to fight off infection.

CONSTRUCTING A HERBAL FORMULA

Before constructing a herbal formula there are a number of steps, of which making a naturopathic diagnosis is by far the most difficult. To diagnose accurately relies on knowledge of the patient, knowledge of pathophysiology, and comprehensive understanding of naturopathic principles. Thorough case taking is essential, including past health history, assessment of nutritional status and levels of stress. This information enables assessment of the patient's vitality and an understanding of why this person has this problem at this time. A solid grounding in both medical and naturopathic paradigms allows for an understanding of the patient's illness from different perspectives. What a doctor calls endometriosis, a herbalist might diagnose as pelvic congestion; what a doctor calls anxiety, a herbalist might diagnose as nervous debility.

Assessment of vitality also helps to determine the appropriate force or depth of treatment: the more vital the patient the more robust they are, and the deeper the treatment can be. For patients with poor vitality, time must be given to nourishing and restoring them, to enable them to withstand more aggressive treatment of underlying problems.

Having clarity about the cause(s) of illness in this person at this time enables the herbalist to clarify what needs doing now and over time. From this a treatment plan can be devised.

CASE STUDY

Maria had a history of severe constipation. Medical investigation had led to a diagnosis of irritable bowel syndrome. Maria was advised to try over-the-counter laxatives; however, these caused painful abdominal cramping. So Maria sought the help of a herbalist. The herbalist took a thorough case history and diagnosed Maria with pelvic congestion caused by inappropriate diet and nervous tension. For symptomatic relief she prescribed a herbal formula containing antispasmodic and carminative herbs, bitters and nervine relaxants. She made some dietary modifications emphasising high-fibre foods, and showed Maria some relaxation techniques as a way of helping to manage stress.

Devising a herbal formula requires clarity of purpose and sound knowledge of materia medica and herbal pharmacognosy. It is important that the herbal prescriptions reflect the treatment aims. Aside from these considerations, herbal formulas may vary between practitioners according to their preference and the availability of herbs.

One example of a herbal formula for Maria could be a combination of:

- Chamomile (*Chamomilla recutita*)
- Wild yam (*Dioscorea villosa*)
- Fennel (*Foeniculum vulgare*)
- Liquorice (*Glycyrrhiza glabra*)
- Cascara (*Rhamnus purshiana*)
- Gentian (*Gentiana lutea*).

Easing spasm and tension in the lower digestive tract is achieved through the antispasmodic action of chamomile and wild yam, the carminative action of chamomile and fennel, the gently warming action of fennel, the demulcent action of liquorice and the relaxing nervine action of chamomile. Gentle stimulation of the bowels is achieved through the action of the bitter cholagogues gentian, wild yam, cascara and chamomile, and through the mild purgative effects of liquorice and cascara. Generalised soothing and relaxation are achieved through the use of liquorice with its adaptogenic properties, as well as the nervine action of chamomile. Liquorice and fennel improve the overall taste of the familiar and are a counterbalance to the extreme bitterness of gentian.

The process of devising a treatment strategy that would lead to construction of a herbal formula can be summarised into a number of steps:

- Decide upon a naturopathic diagnosis
- Assess vitality
- Clarify treatment aims, both short and longer term
- Construct a treatment strategy, including medicines, dietary and lifestyle advice
- Clarify what herbal actions will achieve these aims
- Select the most appropriate herbs
- Choose appropriate amounts of each herb in the formula
- Decide on appropriate dosage of the overall formula.

Amounts of each herbal medicine in the formula will vary according to the emphasis of action. For example, in Maria's case, if the tension is considered to be the main contributing factor to the constipation, herbs with relaxing and antispasmodic actions will dominate the mixture. If it is more an issue of underactivity of digestive processes, then bitter action will predominate. Overall dosage will depend on individual requirements, and is discussed in a later section on dosage.

While individualisation of diagnosis and treatment is the mainstay of naturopathy, there are situations where treatment can be generalised. This is particularly true of acute conditions such as common viral illnesses. In these instances a more generic herbal formula can be dispensed to the majority of patients.

The process of constructing a herbal formulation

In order to design a herbal treatment formula the following points must be considered.

HERB SELECTION

The type of herb selected will depend on a number of factors:

1 Treatment principles selected and the type of person presenting. For example, the patient's constitution.
2 Treatment method required, i.e. will the herbal medicine be prescribed to tonify, regulate, eliminate or other?
3 Type of condition treated. Each type of condition will require varying approaches. For example, chronic conditions typically require mild herbal medicines for long-term use whereas acute treatment typically requires medium to strong herbal medicines in medium to high doses.
4 Consideration of existing presentation. Presence of injuries, infection, fever, etc. will also require symptomatic treatment.
5 Patient's constitution. Those with strong constitutions can benefit from stimulating herbal medicines, whereas those with weak constitutions require combinations of restorative medicines when prescribing eliminative regimens.
6 Intensity of effect desired/outcome. Always remember that different herbal medicines produce varied effects. The quality of the herbal medicine must be considered as well as the dose prescribed.
7 Season, climate and environment. The season will determine the type of prescription. In summer, cooler herbal medicines are encouraged due to the natural increase in body temperature. Conversely during winter, warmer herbal medicines are prescribed to stimulate the body and warm the patient.
8 Availability of herb. Clinic stock and local availability of particular herbs will determine the final selection of a herb.

DURATION OF TREATMENT

In general the duration of treatment will be determined by the following factors.

Nature of the botanical

The strength of the chosen herb/s will determine how long this particular herb or the formula containing this herb can be used:

Mild herbs (e.g. marshmallow)	Long-term — more than 3 months
Medium herbs (e.g. echinacea)	Medium term — between 1 and 3 months
Strong herbs (e.g. *Lactuca virosa*)	Short term — less than 1 month

Principle of the treatment

Depends if the treatment is aimed at:

Constitutional and preventive treatment	Long-term
Rebalancing the disharmony	Short to long-term
Symptom relief	Short term

Nature of the condition treated

Treatment length will be determined whether the condition in general is:

Acute–subacute	Usually short-term treatment with relative high doses in short succession — up to every ½ hour
Chronic–degenerative	Usually long-term treatment with relative low doses dispensed possibly only 1–2 times per day
Local	Usually short to medium term. Dosages medium to high depending on the particulars of the condition. Often uses topical application
Systemic	Usually medium to long-term. Dosages low to high depending on the condition. Usually internal
Of endogenous or exogenous cause	Short to long-term depending on cause and presentation. Dosages low to high depending on the severity of the symptoms and condition
Internal	Medium to long-term. Medium to low doses
External	Short to medium-term. Medium to high doses
Deficient nature	Medium to long-term. Medium to low doses
Excess nature	Short to medium-term. Medium to high doses
Cold	Medium to long-term. Medium to low doses
Hot nature	Short to medium-term. Medium to high doses

Individual constitution

Some constitutions are more sensitive than others consequently they will require different duration of treatment:

Strong constitution	Short- to long-term treatment. Medium to high dose
Weak constitution	Medium- to long-term treatment. Medium to low doses

PREPARATION OF HERBAL MEDICINES

Quality of herbal medicines

The quality of a herbal medicine can be affected by all stages of production, from the raw material through to all processes of manufacture of the end-product medicine. Sourcing of medicinal plants is particularly complex because the chemical composition of the plant will vary due to such factors as climate (temperature, rainfall, hours of sunlight) and soil quality as well as processes of harvesting, drying and storage of plant material. In addition, each step in the manufacturing process can affect the quality of the end product.[33]

Sourcing of herbal medicines

The sourcing of medicinal plants is a complex issue as these plants are sourced from around the world. Supply chains are long, and in most cases it is not possible for herbalists to understand the provenance of the plants they use. This is particularly the case in Australia, where almost all plants are grown overseas. Most species are wild harvested. In Europe, of the 1500 plant species traded in and native to Europe, only 120–130 are under cultivation.[34] In India, most of the estimated 177 000 tonnes of medicinal plants used domestically each year are collected in the wild.[35]

Plant populations are under threat, with 15 000 of the estimated 50–80 000 plant species used medicinally worldwide being threatened with extinction.[36]

Three factors contributing to the threats can be identified. First, overharvesting is common, largely due to increased demand, which means all medicinal plant populations are under pressure. This is largely due to an increase in the use of herbal medicines in developed countries and the increased use of concentrated extracts as opposed to simple preparations of medicinal plants.[37]

Second, changes in land use, through the clearing of land for agricultural use and the demands of increased urbanisation, or through natural or human-made disasters including civil unrest, can destroy the habitat of medicinal plants.

Third, climate change requires the plants to adapt. For example, as increases in temperatures occur, plants requiring cool or cold temperatures move further from the equator and/or to higher ground in order to survive.

IS INCREASED CULTIVATION THE ANSWER?

Cultivation is appropriate for some plants, particularly those for which large amounts are required, such as chamomile and peppermint. Cultivation can also provide manufacturers with control over the growing and harvesting of the raw materials used in their products. However, not all plants are easily cultivated: many require a particular ecosystem in order to survive. In addition, there are social and cultural reasons why wild-grown medicinals are important.

In an era where both practitioners and patients are increasingly interested in the provenance of coffee, food and clothes, and the demand for sustainable, fair trade and organic products is ever-increasing, both herbal practitioners and their patients would like more information about the provenance of the medicinal plants they use.[38,39]

Stringent plant identification techniques are essential to ensure the correct species is being used and that there is no adulteration of medicines with mistaken plant product. Plant identification is most accurately achieved through a laboratory-based technique of thin layer chromatography, which can also be used to test for the presence of marker

compounds. Marker compounds are constituents that can indicate medicinal activity and can be used as a measure of quality. Quality of raw herbal matter should also be assessed through sight, smell and touch. Plant material should be of a good colour, smell fresh (not mouldy or musty), and be well dried but not powdery.

In Australia, the manufacture of herbal medicines is legislated under the Good Manufacturing Practice (GMP) code for quality assurance. This includes controls on processes of screening for contaminants, hygiene of the manufacturing environment, testing and identification of plant material, documentation of manufacturing processes, labelling and post-production quality control. Two exceptions to the GMP code are products made by practitioners for individual supply to patients, and home manufacturing of medicines for personal use. For home manufacture, naturally it is sensible to be mindful of the need for accurate plant identification, and appropriate hygienic measures. Labelling end products is imperative, as is the keeping of accurate and complete records of manufacture. The GMP code is in place to ensure minimal microbial contamination and to safeguard against substitution of the correct plant product for another that may be ineffective or unsafe. In general, Australia has excellent quality control and standards of manufacture, although unfortunately this is not true of all countries, even industrialised ones.

Quality of raw materials and proper manufacturing techniques determine the efficacy of herbal medicines. The higher the quality of the starting material and the better the manufacturing processes, the more effective the herbal medicine.

Historical note

The following extract is taken from John Scudder's 1898 book *The American Eclectic Materia Medica and Therapeutics*:

> *That the physician may be certain as to the quality of these remedies when he makes his purchases, it is well that he should prepare some of them himself. Office pharmacy is profitable in this way if in no other. It may be very simple. You gather the agent in the season when its virtues are greatest, pound it up in a mortar, if you have one, on a board with a hatchet or hammer if you have no mortar, put it in a glass or glazed vessel that can be tightly stoppered, cover it with twice its weight of alcohol (76 to 98 per cent, as the crude article contains resinous substances), and let it stand fourteen days. It is now ready for use. Pour off the tincture, express all you can get out of the drug, and if you want a very nice article, filter through paper. Your Pharmacist turns up his nose at the crude process, but it won't turn up when he is shown the product and has it compared with the 'fluid extracts' on his shelves. It is a sound and reliable remedy, and will give success in practice.*[40]

Standardisation

The standardisation of herbal medicines is a vexed issue. Theoretically standardisation ensures consistency of strength of a medicine. It tests that levels of certain chemical components, marker compounds, are consistent to ensure uniformity between batches of medicine. From the scientific perspective standardised extracts of herbs are useful in research where reproducibility and predictability are important concerns.[25] However, for the practising herbalist there are a number of concerns with this process. Herbs are chemically complex and there may not be agreement about which are the main active constituents to use as marker compounds. In fact there are often multiple active constituents that may work synergistically, so the presence of one constituent in a standardised amount may not be a useful indicator of overall activity. In herbal medicine the saying that the 'whole is greater than the sum of its parts' is generally true. A further concern about standardisation is that herbs may be manipulated to ensure high levels of marker compounds at the expense of other constituents. Given that this may impact on synergistic actions, this kind of manipulation may affect both safety and efficacy of the herbal medicine. Another concern is that extreme forms of standardisation processes involve isolation of particular constituents, in much the same manner as drugs are formulated. The problem with this is one of philosophy as much as practice: in this form the herb is more akin to a drug and is, like drugs, more likely to cause side effects and other adverse events.

Types of herbal preparation

In addition to those factors influencing quality of herbs and variations of standardisation processes, another variable that affects potency of herbal medicines is the different forms of herbal preparations (Table 2.3). Herbs can be used medicinally in a number of forms. What form is administered depends on the condition being treated, availability and convenience, as noted by John Scudder in his 1898 text when he states: 'the most convenient and agreeable form of exhibiting [the herbal medicine], whether it should be given alone, or combined with other ingredients, and how far these are likely to impede, modify, or facilitate its operation [should be taken into account when prescribing]'.

POSOLOGY — HERBAL MEDICINE DOSAGE

Posology, the study of dosage, is a highly controversial area of herbal medicine. In part this arises from the variation in quality, form and type of preparation, but there are also different philosophical approaches to treatment which determine dosage protocols. There are multiple traditions and sources of information, including the pharmacopoeias, other herbal traditions and clinical trials.

Historical perspective

In the late 19th century the Eclectic physician John Scudder[40] wrote in his book *Specific Medication and*

TABLE 2.3 Different herbal preparations

Preparation	Process	Advantages	Disadvantages
Topical preparations Poultices Compresses Creams Ointments Liniments Suppositories Pessaries Infused oils	Water- or oil-based or both	Useful to treat local wounds or inflammation	Messy Oil-based preparations only dissolve lipid-soluble constituents and easily become rancid
Dry preparations Powders	Powdered dried herbs (barks, seeds or roots)	Easily incorporated into food or drinks	Can be difficult to swallow May have an unpleasant taste Have a short shelf life
Dry preparations Tablets Capsules	Compressed powdered dried herbs or spray-dried concentrated liquid extracts	Convenient Bypass unpleasant tastes Can be enteric-coated, useful to avoid irritating the stomach or to avoid alcohol	Excipients added for binding, lubricating, colouring, flavouring and coating Generally low dose Not as well absorbed as liquid forms Lack flexibility for individual prescribing
Liquid preparations (water extracts) Infusions Decoctions	Dried herbs steeped in boiling water (leaves, flowers) or simmered (roots, bark)	Avoids alcohol Hot preparations encourage diaphoresis Increase fluid intake, useful for treating urinary tract problems Pleasant taste	Water a poor solvent, limits extraction of some constituents (e.g. resins) Do not preserve well Need to be prepared daily — inconvenient
Liquid preparations (glycerine extracts) Syrups Oxymels Glycetracts	Syrups and oxymels are a combination of liquid preparations (fluid extracts, juices, decoctions) with sugar or honey Glycetracts use glycerine as solvent	Sweet taste Emollient and demulcent — soothe mucous membranes Avoids alcohol Sugar preserves the medicine for many months	Not as potent as alcohol extracts
Liquid preparations (alcohol extracts) Tinctures Fluid extracts	Water and alcohol combined as solvents Tinctures 1 : 3 (weight:volume) or weaker Fluid extracts most concentrated, usually 1 : 1 or 1 : 2 but can be made up to 8 : 1 concentrations	Most concentrated preparation, so require the smallest dose Alcohol preserves the extract, allowing for a long shelf life Readily absorbed Easy to make into individualised prescriptions	Generally taste unpleasant

Source: Adams J, Tan E. Herbal manufacturing: how to make medicines from plants. Melbourne: Adams & Tan, 1999, p. 15. With permission of Melbourne Polytechnic.

Specific Medicines, that 'As a rule, the dose of medicine should be the smallest quantity that will produce the desired result'. His philosophy was to use minimal medicinal dosing of singular herbs (made largely from fresh herb tinctures) that matched the patient's symptom picture as evident in yet another of his rules: 'it is best to employ remedies singly, or in simple combination of remedies acting in the same way'. In this he differed from his contemporary John Uri Lloyd, who used drop doses of more concentrated herbal liquids, maintaining that the doses used by Scudder were not potent enough. The issue of dosage has been a highly contentious one throughout the long history of herbal medicine practice, and continues to be so to this day.

Modern perspective

Provided that the practitioner has been appropriately trained in one form of dosing with consideration given to philosophical and practical approaches (namely vitalistic or pharmacological), the results for their patient are likely to be positive, as the practitioner will be acutely aware of what is in the best interests of the health of the patient. The merits of each philosophy should be emphasised, rather than deciding that one or the other is more correct. Fittingly, Eli Jones commented in his book *Definite Medication* in 1911:

> *In our grand and noble profession we have no place for a narrow-minded man, a bigoted man. A physician who*

cannot see anything good outside of his own particular school of medicine is a small-minded man and will find his level as such men always do.

Both approaches acknowledge an innate energetic quality of the herbs involved, and that a unique synergy can come from either a well-chosen single herb or a combination of herbs, providing patients with many health benefits. Indeed, at the centre of each philosophy is the understanding that each patient is an individual and requires a unique formulation and dosage. This was described aptly in Scudder's 1898 text when he stated that 'in prescribing a medicine, it is necessary to consider the age, sex, temperament, habits and idiosyncrasy of the patient, before the dose can be properly apportioned'.[31]

VITALISTIC APPROACH

Simples

Some herbalists prefer to treat using 'simples' (the use of one herb at a time). This approach which, as previously mentioned, largely stems from the philosophies of the Eclectic physicians Scudder and Lloyd, has some similarities with homoeopathy in that herbs are matched to the patient's symptom picture, and only very small doses, from 10 to 50 drops daily, are prescribed. In this approach the 'energetics' of the herb is felt to be as influential as any physical action they have on the patient's biochemistry. This approach is practised by some, but not the majority, of Western herbalists.

Polypharmacy

Another kind of approach is polypharmacy where multiple herbs, perhaps 8–15 different herbal medicines, are combined together into a formulation. This system is used popularly in Ayurvedic medicine and traditional Chinese medicine, where herbs are formulated into prescriptions based on a particular framework. Within the Western herbal tradition, some herbalists follow a similar approach when they find that particular herbs work together synergistically, but caution needs to be taken so that this does not end up as a 'shotgun' approach that indicates an inability to properly diagnose or clarify priorities of treatment. Using many herbs in a formula also means only small amounts of each herb can be included and this may lead to less effective treatment.

PHARMACOLOGICAL APPROACH

The most popular guidelines for dosage are based on pharmacopoeias like the British Herbal Pharmacopoeia (BHP) and the German Commission E monographs. Dosage recommendations in the BHP come from combining recorded historical accounts with average doses used by UK herbalists surveyed in the 1980s and from information gathered in earlier texts such as the British Pharmacopoeia and the British Pharmaceutical Codex. There are some problems and inconsistencies in this method but it is still a very useful guide. The Commission E, established by the German Health Department, also in the 1980s, comprised a committee of industry and academic experts who reviewed clinical research and combined this information with traditional knowledge.[32] The resultant herbal monographs were then compiled, released for public comment and reviewed again. Thus the German Commission E monographs are considered to be of exceptional quality and of great use to the modern practitioner.

The dose of each herb in the pharmacological approach is usually expressed as a range of either daily or weekly amounts. For example, dosage of chamomile (*Chamomilla recutita*) can be calculated at:

- 2–8 g dried herb (taken as an infusion) three times daily
- 1–4 mL of a 1:1 fluid extract three times daily, or
- 20–40 mL fluid extract per week.

There is a broad dosage range listed for most herbs as they have a wide therapeutic index, and thus a wide margin for safety (and efficacy), when compared with pharmaceutical drugs. However, care should be taken for herbs that have a low safety margin (e.g. *Phytolacca decandra*), ensuring that the patient is given small, incremental doses in order to avoid side effects from occurring. Further discussion regarding dosage for different subgroups of the population (such as children) can be found later in this chapter.

The pharmacological approach often employs a relatively small number of herbs in a formula (4–6 herbs), although the daily dose for the whole formula can be quite high, for example between 4 and 10 mL two to four times per day (a total of 8–40 mL/day). When comparing the modern dosages of herbal medicines to the traditional dosages of their Indian and Chinese counterparts, the ranges in general are strikingly similar (and tend to be in the higher dosage range).[32]

MANUFACTURERS' DOSAGE RECOMMENDATIONS

Herbal medicine manufacturers label each liquid extract with a suggested dosage range and this can be used as a guideline; however, there is merit in checking multiple sources, including the pharmacopeias mentioned above, for dosage recommendations. The herbalist can then construct a herbal formulation which includes a number of herbs within the recommended dosage range. The way in which an extract is produced can greatly impact on the dosage range, and for this reason the manufacturer dosage guidelines are useful. Extracts that are produced from reconstituting more concentrated extracts produce vastly different end results to those that are made from more traditional methods such as reserved percolation.[32] Theoretically a 1:5 extract has more than five times the activity than a 1:1 extract, and this should be taken into account by the practitioner.

CONSIDERATIONS FOR LIQUID FORMULATIONS

There are many ways to think about constructing a herbal formula, and the goal is always to ensure that the practitioner maintains the fundamental therapeutic objectives when choosing the herbs to include in a particular herbal mix. The following is one example of a framework that can be used to achieve this end.

Type of desired herbal action

When considering which herbs within a formula should have a higher dose, it is important to consider the actions that the practitioner desires:

1. *Prime mover herbs* are given dosage emphasis within the formula, and are those that are most highly indicated. These herbs can often be included to treat the patient's symptomatic complaints, such as sedatives to improve sleep.
2. *Adjuvant herbs* are those that are indicated, but are included more for their supportive or tonifying actions, that work over a longer time frame. These herbs are often enhancement herbs, such as adaptogens, that help aid the stress response over a longer time frame. Further subgroups of adjuvant herbs are described below:
   a. *Helper herbs* help the prime mover work. They are not always necessary; however, for example, you may want to include *Marrubium vulgare* in a cough formula to help loosen mucus.
   b. *Assistant herbs* are those that are included for secondary health problems. For example, if you include *Matracaria recutita* in a digestive formula it will strengthen the digestive system and improve sleep.
   c. *Moderator herbs* reduce any overtly strong effect in the prescription. These are not always necessary. An example may be where you include a warm herb such as ginger to a mixture to reduce the mixture's cooling effects.
   d. *Messenger herbs* are included only if necessary and ensure that the energy of the prescription goes to the organ most affected. For example, you may want to combine goldenseal and elecampane to direct both herbal medicines to reduce mucus from the lungs (both would work on the lungs; however, the combination would enhance the effect).
   e. *Harmonising herbs* can be included to harmonise and integrate a prescription. A good example is liquorice; it is not always necessary nor is there always room in the bottle, however, it is advantageous if possible.

Synergy

Synergy is a concept used to describe the philosophy that the overall result of the combined formula is greater than the effects of its individual constituents.[32] This concept (difficult to quantify and qualify) is widely accepted as fact by many herbalists, although it should be questioned, especially since there is considerable traditional evidence for using singular rather than combined herbs. Some early trials are being conducted that support the concept of synergy, but not all combinations of herbal medicines should be considered 'synergistic' simply because they are in the same bottle. Overlapping actions of different herbs within a formula need to be taken into account when devising a prescription and dosage, in order to ensure that the desired actions are enhanced and the undesired minimised. The synergy of herbal medicines should not be underestimated as they can provide profound results, given the right circumstances, although future research needs to be conducted.

Nature of the herb

The nature of the herb in question needs to be considered, for example in the case of bitters, only small amounts are needed to stimulate digestive secretions, so lower doses are preferred.

Quality

The quality of the raw material (see above) affects the final dosage required. As already discussed, this factor is difficult to control. Even if all manufacturing and processing techniques remain the same, individual batches of herbs from different raw materials can deliver vastly different end products. Therefore manufacturing companies often standardise levels of certain constituents, in an attempt to ensure a higher degree of consistency.

Preparation form

The form of preparation, as mentioned previously, can significantly affect the dosage range. This is due to the nature of the active components and the method of extraction that ensures their best mode of delivery to the patient. For example, a larger amount of fresh ginger is required in a herbal infusion (tea) as compared with an alcoholic extract (tincture).

Individual response

Variations to dose depend on individual circumstances such as sex, weight, organ function, absorption and metabolism, timing (e.g. before or after food), current medication, tolerance and route of administration.[33]

Dosage methods for modern herbal prescriptions

The following comments relate to the dosage of alcoholic extracts, which in Australia are most commonly prepared from dried plants as 1:1s and 1:2s. Some herbalists prefer 1:5s and/or to use extracts prepared from fresh plant material.

AMOUNT PER WEEK METHOD (Table 2.4)

The amount per week method is the most common method of determining dosage and dispensing quantities. It is calculated by the fact that a daily dose can be converted into a weekly dose for convenience of dispensing. The therapeutic dosage of herbs is listed in this form (i.e. mL/week). Dispensing dosages are then based on the fact that 105 mL can fit into a 100 mL bottle or 210 mL can often fit into a 200 mL bottle, allowing for a dosage of 5 mL t.d.s. or 7.5 mL b.i.d. or a single daily dose of 15 mL to be prescribed. Thus if a herb dose of 2–3 mL three times daily (t.d.s.) is required, this is converted into the weekly dose of 42–63 mL (rounded to 40–65 mL). So if this herb was a prime mover a dose of 55–65 mL would be included in the 100 mL bottle, leaving 35–45 mL for 'adjuvant' herbs to be included. This would

TABLE 2.4 Example — Amount per week method				
Herbal medicine	**Ratio**	**Dosage range (per week)**	**Dosage per week**	**Dosage for 2 weeks**
Chamomilla recutita	1:2	20–40 mL	40 mL	80 mL
Glycyrrhiza glabra	1:1	10–30 mL	30 mL	60 mL
Gentiana lutea	1:1	5–15 mL	10 mL	20 mL
Rosmarinus officinalis	1:2	15–30 mL	20 mL	40 mL
Dosage: 5 mL t.d.s.				
TOTAL			100 mL	200 mL

TABLE 2.5 Amount per dose method 1				
Herbal medicine	**Ratio**	**Dosage range (per week)**	**Quantity per dose**	**Dosage per week**
Chamomilla recutita	1:2	0.95–1.9 mL	1.51 mL	31.51 mL
Glycyrrhiza glabra	1:1	0.75–1.42 mL	1.41 mL	29.41 mL
Gentiana lutea	1:1	0.23–0.71 mL	0.51 mL	10.51 mL
Rosmarinus officinalis	1:1	0.71–1.42 mL	1.36 mL	28.61 mL
TOTAL			5 mL t.d.s.	105 mL

then be dispensed at a dose of 5 mL t.d.s., or 7.5 mL b.i.d. If the practitioner wanted to see the patient in 2 weeks, the amount of prime mover herb would be multiplied by 2. (See Table 2.4.)

AMOUNT PER DOSE METHOD 1 (Table 2.5)

The amount per dose, for each herb, is calculated by dividing the weekly range by the number of doses per week (i.e. a prescription of 5 mL t.d.s. over 1 week = approximately 21 doses). This can give the practitioner a higher degree of accuracy when determining how much of each herb the patient is consuming in each dose. To make up the final formula the amount of each herb per dose is scaled to the total required for the bottle, as shown in Table 2.5.

This technique is of particular use when prescribing herbs that have a high level of toxicity, or potency (e.g. *Phytolacca decandra*) or if you wish to prescribe herbs at a dose other than at 5 mL t.d.s. or 7.5 mL b.i.d. (See Table 2.5.)

AMOUNT PER DOSE METHOD 2 (Tables 2.6 and 2.7)

An alternative method of amount per dose method is as follows.

Dosage formula

$$\frac{\text{total amount}}{\text{total minimum amount}} = X$$

$$X \times \text{each minimum dose} = \text{mL}$$

EXAMPLE

Herbal formula including the following herbs:

TABLE 2.6 Amount per dose method 2 (sample formula)		
	Daily dosage range	
Herbal medicine	**Minimum**	**Maximum**
Rehmannia glutinosa	4.3 mL	8.6 mL
Iris versicolor	2.9 mL	5.7 mL
Cynara scolymus	2.9 mL	7.9 mL
Calendula officinalis	1.4 mL	4.3 mL
Thymus vulgaris	2.1 mL	5.7 mL
TOTAL	13.6 mL	32.2 mL

As we have 5 herbs in this formula, we can determine how many millilitres are required for each herb at the minimum therapeutic dose.

For example:

$$\frac{\text{total mL}}{\text{total minimum dose of all herbs in formula}} = n$$

In a 200 mL bottle (that can fit 220 mL) we divide the total mL by the total minimum dose of all herbs in formula, that is:

$$\frac{220}{13.6} = 16.18\,(n)$$

We then take n (16.18) and multiply it by the minimum quantity of each herb (as listed in Table 2.6) to

TABLE 2.7 Amount per dose method 2 (calculation of formula)

Herbal medicine	Minimum	Calculated qty	Qty required
Rehmannia glutinosa	4.3 mL	69.57 mL	70 mL
Iris versicolor	2.9 mL	46.92 mL	45 mL
Cynara scolymus	2.9 mL	46.92 mL	45 mL
Calendula officinalis	1.4 mL	22.65 mL	25 mL
Thymus vulgaris	2.1 mL	33.98 mL	35 mL
TOTAL	13.6 mL	220.04 mL	220 mL

Qty, quantity.

determine the total quantity of each herb required for a therapeutic effect.

This can be best summarised as shown in Table 2.7.

OUTCOME

Therefore, the dosage calculation is between 13.6 and 32.2 mL/day (calculated minimum and maximum dosage range of all herbal medicines), and the realistic recommendation for your patient will depend on the speed of action required, the patient's condition and temperament.

Dosage could be 15 mL/day (5 mL t.d.s.) or could increase to 30 mL/day (10 mL t.d.s.) or anything in between.

Treating children

Deciding on the dosage required for each patient is basically an art that improves with time. Each child has a different temperament, a different constitution and a different metabolic rate. Once the practitioner has connected with the patient they will begin to determine what 'type' they are. Each person will respond to the same herbal medicines differently. Some people have very strong affinities and aversions to certain medicines and some people are very sensitive to dose fluctuations. As a general rule, always start with a low dose and be selective with the herbal medicines. If presented with an 'allergenic' child, be realistic and start them on one drop of the medicine, preferably in the clinic, and watch their reaction. It is unlikely that they will have any reaction; however, it will give great insight into their connection and response to the medicine so that their therapeutic dosage can be recommended confidently and accurately.

In pre-pubescent children it is usual to avoid very stimulating or heating herbs, all toxic herbs, and hormonally active herbs. The bitter taste of many herbal medicines and the alcohol content of fluid extracts can be off-putting for children, although if they have taken this type of medicine since infancy they will not flinch. Disguising the medicine's flavour with syrups, cordials or fruit juice helps with compliance — and medicinal syrups can be used to enhance the overall medicinal activity too. Children are usually given small, frequent doses as they generally metabolise very quickly.

Generally speaking, all herbal medicines are fine to give to children in theory, provided they are given at the correct dosage. Understandably some herbal medicines resonate more strongly with children than others. Both of these points should be taken into account when preparing formulations. Teenage children can be given adult doses unless they are particularly small for their age.

THERAPEUTIC DOSAGE

For a herbal medicine to work it must be given at a therapeutic dosage; that is, the amount required to produce a therapeutic result. Higher amounts of the plant are appropriate when your aim is to give more of the plant material; lower amounts of the plant are appropriate when your aim is to give a more energetic level of the plant. In fact, both therapeutic ranges work best for different types of patients.

It is essential to recognise that some children will be incredibly sensitive to the energy of the plants and will have wonderful reactions to the teas, while others may require stronger therapeutic dosages.

SAFE DOSAGE

The safe dosage of a herbal medicine is the amount of the herb that can be administered safely. The recommended dosages in the example below are safe therapeutic amounts (for an adult). It is imperative that you adhere to the recommended dosages. Please note that dosages are calculated for adult long-term use. Short term (acute conditions), the dosage *may* be increased above the maximum (though never for *Tylophora indica* or *Phytolacca decandra*); however, do not exceed the dosage drastically. This is especially important in smaller children and babies. It is best to be safe and adhere to recommendations and use the therapeutic freedom when treating older children and adults.

RECOMMENDED DOSAGE

When working with children you will notice that small dosages are very successful. Children have a wonderful ability to respond very quickly to herbal medicines. Therapeutic recommendations of herbal medicines are general guidelines. Always start at the lower end of the therapeutic margin and if the dosage is not sufficient, it may be increased *gradually* towards the upper limit. The art of giving herbal medicine is finding the correct amount for the person (child) you are treating.

There may be times when it is appropriate to give a higher dosage:

- When the patient does not respond to small dosages
- In acute conditions, when there is no time to waste and you feel it is essential to get things moving.

In these instances it is imperative to use your discretion and monitor your patient closely.

CHILD DOSAGE

Calculating the dosage for children can be easily achieved by using some simple formulas. Please note that these methods are only approximates as metabolic changes can interfere.