

Neale's

Disorders OF THE Foot

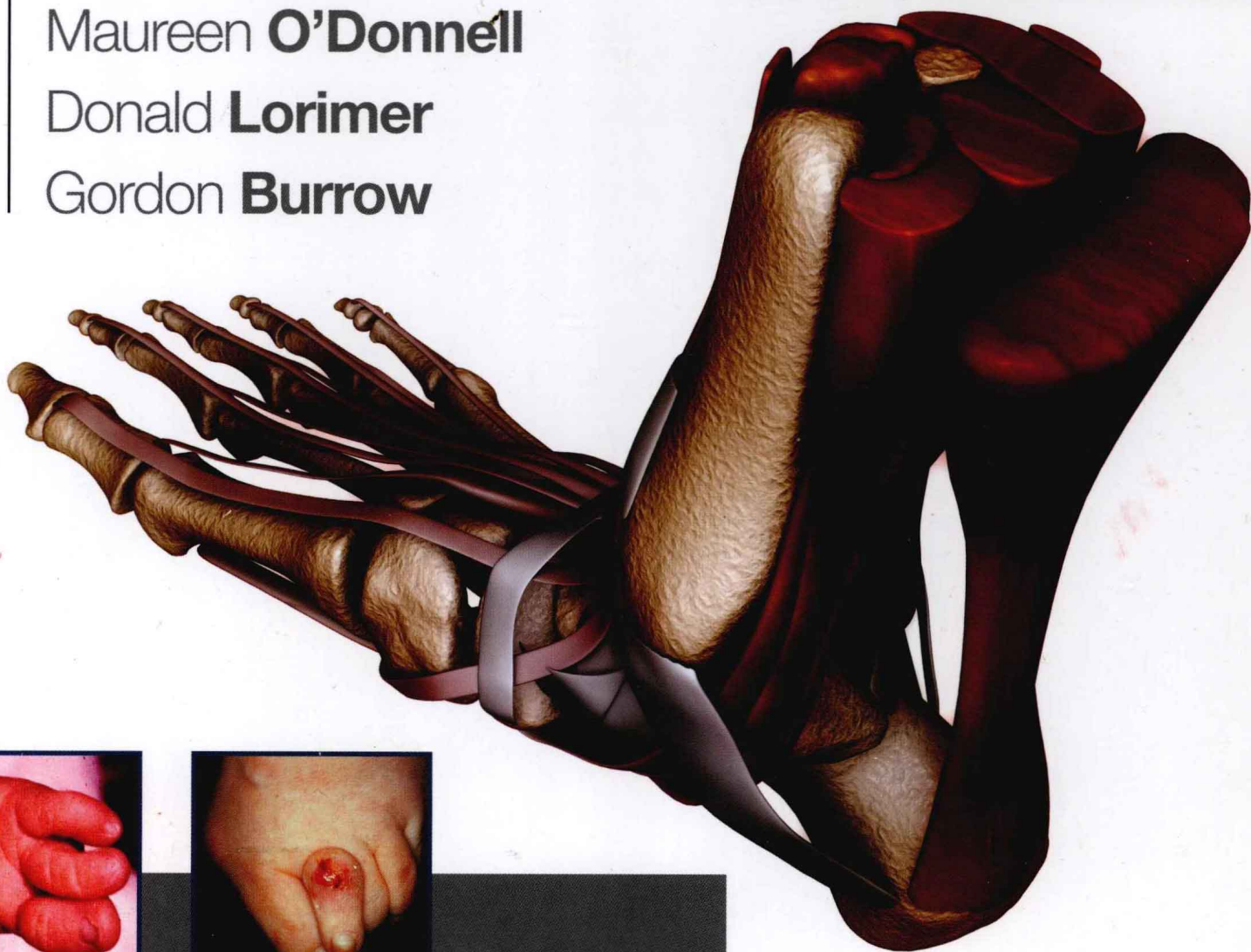
Paul **Frowen**

Maureen **O'Donnell**

Donald **Lorimer**

Gordon **Burrow**

EIGHTH EDITION



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ELSEVIER

evolve
learning system

Neale's

Disorders OF THE FOOT

EIGHTH EDITION

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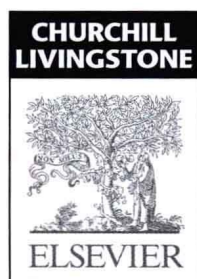
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Foreword by

Val Brewster



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Foreword

In 1981 when my grandfather, Donald Neale, completed the 1st edition of his book 'Common Foot Disorders' he would never have imagined that the book would become the academic heavyweight that the 8th edition is today. His work always played a part in my life, from my visits to him at the Edinburgh Foot Clinic (usually for treatment of my verrucae) to my fascination with the gruesome photographs that were always on his desk. My grandfather was so proud of me when I started nursing but I wish he had known that I was to have a career change and follow in his footsteps shortly after his death in 1997. His dedication to his family and the profession was absolute and his hard work was a major contributor to the progression of the profession.

The original title of 'Common Foot Disorders' is no longer suitable for this book which has developed to meet the increased scope of practice of the podiatrist, the ever evolving curriculum for students and the CPD requirements for practitioners. A vast range of foot disorders and systemic related pathologies including, rheumatology, vascular disorders, dermatology and diabetes are covered in detail. Whilst the text is thorough it is enhanced by explicit diagrams, tables and photographs. Some of the foot conditions and related disorders are not necessarily seen in everyday clinical practice but recognition, diagnosis, referral and management is a requirement for today's clinicians and this book meets these needs. A Clinical Companion and an interactive Web Base is now available with the 8th edition.

The 8th edition is an invaluable source of references and updated material for practitioners and other health care professionals. It continues to focus on, and deliver, updated learning material for

students and comprehensively covers topics required for their clinical experience, examinations and assessments. The web pages include video clips and self assessment multiple-choice questions all of which are clinically relevant to students and practitioners. Several chapters have been altered, amalgamated or streamlined to reflect current practice. Leprosy and Tropical Diseases have been combined, Musculoskeletal Disorders updated and there is a new slant on the chapter dealing with the podiatric problems of the elderly patient. Therapeutic footwear is now an addition within the footwear chapter and the medical emergencies chapter is very appropriate to current podiatric practice.

The addition of the clinical companion and web based interactive material is a huge step forward. The clinical companion is based on the main book and is an excellent resource for a quick reference clinical tool or revision, with concise information which is easy to access and is very relevant to the clinical situation. To have such a variety of learning tools is excellent; it helps to consolidate information in a memorable and interesting way.

The 8th edition continues to extend the work started by my grandfather 30 years ago. It clearly reflects the great strides which have been made in the profession since the first edition.

I am certain that all podiatry practitioners will find this an invaluable and informative book.

Valerie Brewster
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Preface

to Eighth Edition

The first edition of this text was produced by Donald Neale in 1981, with a view to develop a book which incorporated the many diverse bodies of medical and biological knowledge that are essential components of the profession of podiatry. Prior to this most of the literature that had been specifically developed for the profession had been written in the years preceding World War 2 and whilst revised to reflect changes in practice were very much embedded in the fourth decade of the twentieth century.

Neale's Disorders of the foot, has incrementally evolved since the first edition which represented UK podiatric practice in the late 1970s. Notably in the first edition, local anaesthesia, nail surgery and surgical procedures (other than those carried out by orthopaedic surgeons) were not included. These omissions were rectified within the second and third editions of the book.

Podiatric practice and education has developed significantly within the past 30 years both in respect of scope of practice and educational changes that were required to support practice. All approved programmes of Podiatry in the UK are now normally at honours degree level or above. Increasing numbers of podiatrists now have higher degrees and this has contributed to the breadth of the evidence base upon which best practice is founded. The text has similarly developed edition by edition in an effort to reflect the changes and in this the eighth edition in addition to the re-writing and revisions of chapters the opportunity to utilise web based media has also been taken.

The seven previous editions of the text have endeavoured to be a focus for the knowledge base of the profession whilst giving emphasis to the place it holds within the wider field of patient care. Similarly the eighth edition strives to continue this role and many chapters have been revised or rewritten and a number of new contributors have provided a fresh approach to some of the content.

The layout and content of chapters has caused much thought and there have been a number of changes which place some elements in more logically clinically related locations and where possible

duplication of information has been minimised. The need for the text to provide for the needs of both the student podiatrist and the practitioner has been at the forefront of our deliberations and it is hoped that the eighth edition continues to provide a ready reference from assessment to diagnosis and management.

The common cutaneous conditions such as corn and callous have been displaced from the chapter which deals with dermatological conditions and the chapter on nail disorders has been expanded to include cutaneous disorders. The chapter on podiatric management of the elderly has been rewritten and focuses on the elderly patient's journey in relation to a host of conditions which may affect the foot and the specific issues that relate to caring for the older patient. Much of the chapter on orthoses has been modified and now is more reflective of current therapies and paradigms whilst continuing to reflect traditional techniques which remain part of contemporary practice.

The podiatrists increasing role in the prescription and supply of therapeutic footwear is addressed by an additional section within the chapter that relates to footwear and will add additional relevance. Furthermore, the podiatrist's role in health promotion has also been recognised and the chapter on patient education has been substantially revised to reflect this.

The material that is based on the web has allowed enhancement of information by making material available with video and a greater number of images and presentations. Patient examination techniques and gait analysis are available as videos and a range of self assessment questions are also available. It is hoped that when necessary updates may be possible using this medium. In a new departure, a companion to this text has also been created which is intended to provide for quick and easy reference within the clinical environment.

Paul Frowen
2010

Preface

to First Edition

Most books about the feet have naturally enough been written by medical authors for medical readers and they have dealt mainly with the major deformities and acute traumatic injuries and with their surgical management. Most everyday foot troubles, however, develop from biomechanical anomalies which only gradually become symptomatic, though they may ultimately be quite disabling in their cumulative effects. They only seldom reach the physician or surgeon and are generally treated by chiropodists, for whom there has recently been a relative dearth of literature. This book has been compiled to help to fill that need and it has been written with a clinical orientation.

There is abundant evidence that the common foot disorders cause a great deal of pain and disability. Numerous surveys have shown how prevalent they are among all groups of the population from school children to the elderly. They require specialized knowledge and skills for their effective management. The evolution and development of a chiropodial profession specializing in this field is sufficient testimony to the need.

In the UK, the training of a state registered chiropodist is broadly based on the medical sciences. It equips him/her to provide a comprehensive service of diagnosis and treatment virtually from the cradle to the grave and to identify those cases which require medical or surgical investigation and treatment. The scope of practice of the chiropodist has steadily enlarged within recent years and his/her therapeutic methods have become more efficient and durable. Developments in the field of mechanical therapy and the capacity to undertake minor surgical procedures under local anaesthesia have particularly increased his/her range and effectiveness.

It is in the public interest that this expansion should continue since it is a wasteful use of other costly skills and facilities if physicians and surgeons are unnecessarily burdened with cases within the competence of chiropodists. Heavy demands on hospital beds and operating theatres place a premium on effective methods of foot care which obviate or postpone the need for admission to hospital or which enhance post-operating care.

The diagnosis and management of the common foot disorders require the application of a variety of manual skills which cannot be taught or learnt solely from books. Such practical techniques as clinical examination, operating, and applying dressings can be mastered only through repeated practice under the guidance of clinical teachers. While they are all necessarily based on scientific principles, their application to individual cases is more art than science. There is no way of acquiring such skills other than by instruction from expert clinicians and practice in the techniques involved. It is impracticable to attempt to include much detailed instruction of that kind in a general text and it is properly left to the clinical teacher who has the dominant role in establishing the required levels of practical expertise. This book attempts no more than to encapsulate current concepts on the origins, diagnosis and conservative management of the common foot disorders, while relating this particular field to the general medical and surgical conditions which bear directly upon it. The willing cooperation of so many different disciplines in its preparation is indicative of such collaboration in the clinical field.

D. N.
Edinburgh, UK, 1981

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Chapter

1

Examination and diagnosis in clinical management

Gordon Burrow

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2	Assessment of coordination
3	Assessment of gait
3	Assessment of motor tone
3	Assessment of power
4	Assessment of reflexes
4	Associated manifestations of symptoms
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15	Musculoskeletal system
15	MRC classification of muscle power
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Neurological assessment
 Neurothesiometer
 Palpation
 Past history
 Psychosocial history
 Quality of symptoms
 Quantity or severity of symptoms
 Review of systems
 Setting of symptoms
 Signs and symptoms of peripheral vascular disease
 Skin colour
 Skin integrity
 Skin temperature
 Skin texture
 SOAPE system
 Surgical interventions
 Swellings
 Timing (onset, duration, frequency) of symptoms
 Upper motor neuron (UMN)
 Vascular assessment

'Use the past as a mirror when studying the present; there can be no present without the past.'

'Watching others do something is easy; learning to do it yourself is hard.'

'To experience is better than to be told; seeing for oneself is better than hearing from others.'

Chinese proverbs (Wanheng & Xiaoxiang 1996)

INTRODUCTION

Communications are the most useful/vital component part of clinicians' skills, allowing them to manage patients effectively and efficiently. It is apparent that, in a litigious society, failure to communicate to, with and about our patients is a primary cause of many cases against practitioners. It is failure to communicate with the patient from the start, in our history taking, that may lead to misdiagnoses, poor management strategy or poor compliance by the patient. Failure to communicate properly what occurred during the consultation phase, and to document the management strategy and agreement by the patient in the case record leads to many cases of complaint, disciplinary procedures or litigation by patients against podiatrists.

The process by which clinicians gain, analyse or interpret the information that the patient imparts to them is, by and large, an invisible process, but it gives visible and resultant shape to the data compiled throughout the consultation and clinical interactions. 'Clinical thinking' is a name given to that invisible process (Bates 1995). It is a process demonstrated and observed during training but developed and honed by experience and continuous professional development of clinical and academic skills. It is a skill that is acquired rather than taught, as it is very much based on clinical experience and judgement.

GATHERING DATA

From the initial referral letter, or initial contact with the patient in the surgery, the practitioner continually observes, asks open-ended questions and uses additional methods to encourage the patient to divulge his or her story.

This process of taking a podiatric history comprises many constituent parts and in American terms is the 'clerking process'. To many students it is a daunting experience, requiring the collection of information, which often needs restructuring to make sense of the vast amount of data obtained from both the history and the examination. The student/practitioner requires an open, enquiring approach to this process, within a systematic framework, to ensure that the all-important information is gleaned in an efficient and effective manner.

During the process the student/practitioner needs to encourage the patient to divulge information. This encouragement may take numerous forms (Bates 1995):

- Facilitation – actions, postures or words communicating the practitioner's interest in the patient: may take the form of leaning forward, ensuring eye contact, a gentle touch to a particular spot.
- Reflection – a word or phrase the patient has used is repeated back to them.
- Clarification – requesting the patient to give more meaning to what he or she has said, to ensure that the practitioner's interpretation matches that of the patient.
- Empathy – recognition of the patient's feelings through the practitioner's words or actions.
- Ask about feelings – ask what the patient felt about the pain, discomfort, event or symptom.
- Interpretation – put into words what the practitioner has deduced/inferred/interpreted about what the patient has said to them, to ensure there is no misunderstanding.
- Confrontation – state something about the patient's responses (feelings, behaviour) which is inconsistent with other symptoms or signs.

The interview/consultation is potentially the most powerful, sensitive instrument at the command of the podiatrist, and yet it is probably the most misused or misunderstood aspect of our practice.

The patient has become the focus of NHS attention, and as patient-based clinical methods are paramount, the interview/consultation has taken on even greater importance. Most clinicians still rely on the gathering of information from the patient as the prime means of making a diagnosis and deciding on a management strategy for treating the condition or complaint. Technology and instrumentation or tests assist in the process but communication is still the primary basis of the process. The physical examination is based on the information gleaned, and helps to confirm an initial working hypothesis or diagnosis and to enable the clinician to make the best use of resources such as tests, diagnostic equipment, time and expertise. It also demonstrates a professional approach to the patient, and is both an efficient and an effective use of scarce resources.

It is routine practice that a patient's history is obtained before undertaking a physical examination. Remember, however, that informed consent is required for a practitioner to obtain information and prior to performing a physical examination. It is prudent to ask the patient whether he or she is willing to divulge information to you by explaining *why and how* the consultation will be conducted.

After the physical examination it may be necessary to conduct a further specific examination or to undertake more robust tests, or to refer elsewhere for further opinion. Although these are explained as

separate areas, they should be viewed as dynamic intertwined processes. Taking the history is usually the first, and perhaps most important, aspect of the assessment of and interaction with a patient. It is a gathering of data that is not just about the specific complaint that brought the patient to the surgery and upon which the podiatrist will make the diagnosis. It is a learning experience for the practitioner about the patient, about how the patient experiences and views his or her symptoms, and perhaps about the patient's expectations of treatment. It also allows the patient to have a learning experience about the practitioner. Thus it is the building block or foundation of future trust and a professional patient–practitioner relationship.

TAKING A COMPREHENSIVE PODIATRIC HISTORY

The purpose of a consultation is twofold.

First, it allows the patient to present the problem to the podiatrist, which is a therapeutic process in itself.

Secondly, it enables the podiatrist to sort out the nature of the problem (diagnosis) and decide on any further course of action that might be needed.

There are four key skills to history taking:

- active listening
- soliciting attribution
- providing support
- establishing agreement.

The manner in which a podiatrist talks with, rather than to, a patient while taking the history, establishes the foundation for good care. Listen carefully; respond skilfully and empathetically (Bates 1995) – the active listening stage. The podiatrist needs to learn what exactly is bothering the patient, what symptoms he or she has experienced, and what the patient thinks the trouble may be, how or why it happened and what the hoped-for outcome is. As the information is given, the podiatrist formulates hypotheses or a range of potential diagnoses. Do not attempt to plump for a diagnosis straight off, as this may close the mind to other signs and symptoms that do not fit with that hypothesis. The hypothesis/examination, or history taking, starts immediately the patient is introduced in the waiting room and the practitioner greets the patient. Too often practitioners miss the opportunity to observe patients unobtrusively while they are relaxed and apparently unobserved – from the time they are called to the time when the patient feels the consultation starts (i.e. when they are sitting on the patient's chair). Significant opportunities for gait analysis are missed. The standard approach is to elicit the history before any physical examination (Marsh 1999) but this misses opportunities to observe patients in the waiting area without them knowing they are being observed.

The atmosphere and setting of the assessment is as important as the examination itself. The patient should be assured of absolute confidentiality, and the assessment should not be rushed. Each patient expects, and deserves, full attention to and sympathy for their problems. The patient should feel confident in the podiatrist's diagnostic abilities, but also in their empathy, understanding and motivation. 'The history is the most important part of the patient's assessment as it provides 80% of the information required to make a diagnosis' (Marsh 1999).

Assessment forms the basis for any planned intervention (Baker 1991), providing the baseline upon which subsequent intervention is measured and outcomes compared. Systematic, ongoing assessment is vital, to monitor and evaluate the success of care and detect new or different problems from those presented initially. This forms the basis

of evidence-based practice and care. However, prior to any form of assessment, the patient's consent to treatment and giving of personal information should be sought.

There are two types of consent: tacit and informed consent. Consent is defined as 'to give assent or permission; accede; agree. It is voluntary acceptance of what is planned or done by another, agreement as to opinion or course of action' (Readers Digest 1987). *Tacit consent* is the act of non-verbal or written agreement to treatment, while *informed consent* is the act of making a rational consent to treatment based on all the facts provided (Ricketts 1999). If a patient agrees to come to the podiatrist's surgery, removes their socks and shoes, and sits in the chair expecting treatment, they are tacitly agreeing to the podiatrist undertaking some form of examination. However, when a specific form of treatment/examination is proposed, informed consent is required from the patient to ensure their compliance with and agreement to that form of treatment/examination taking place. Again, this comes down to communication. Patients should be aware of why a podiatrist requires certain information, such as current medication, previous illness, previous drug therapy, surgery etc., otherwise the patient may not see the relevance and not divulge the information – potentially leading to misdiagnoses as a consequence of the incomplete information upon which the diagnosis is based. The podiatrist cannot do every possible test on every patient, and therefore intelligent use of the history may shorten the examination and yet make it more informative (DeMeyer 1998).

ELEMENTS OF THE HISTORY

The examination will consist of:

- introductory information
- chief complaints
- past history
- current health status
- family/social history
- psychosocial history
- review of systems.

Introductory information

Introductory information includes the date of the history taking, identifying data or demographics (age, sex, ethnicity, place of birth, marital status, occupation, religion), source of referral (if any), source and reliability of the history. The history taking then proceeds to a discussion of the patient's chief complaints. It is necessary to discuss with the patient why these particular pieces of information are required, especially as nowadays people are more attuned to discrimination for various reasons. Careful thought should be given as to why these pieces of information are really needed. Age can lead to vital clues as to which condition it is most likely to be, given that some foot pathologies are more likely to occur in early childhood, but the effects may produce other pathologies in later life. Furthermore, women are more at risk of some disorders than others; for example, rheumatoid disease is three times more likely in women than in men at a given age. The patient's place of birth may lead to a diagnosis of a rarer form of systemic disease than would otherwise be suggested by the current place of residence; for example, someone now resident in the UK, but who was born and spent most of their early childhood in the Indian subcontinent, may have developed Hansen's disease – a condition not normally associated with the UK. Marital status may provide assurance that the correct phrases and forms of address are used, and that no *faux pas* are made by the podiatrist leading to a breakdown in

communications, for example, where children are concerned. Occupation is possibly the most easily explained question, as it may give vital clues to the amount of load or trauma the foot is undergoing, or specific conditions to which the foot is exposed. Religion, perhaps, will help to guide practitioners through some areas leading to non-compliance with management plans, or the inability of the person to communicate certain vital clues to diagnoses. Communication skills are required throughout, ensuring tact, diplomacy and empathy.

Chief complaints – soliciting contribution

This is the main focus of the history and the prime reason why the patient has presented to the practitioner. A detailed and thorough investigation of the current concern is vital, and comprises two essential but combined parts: the patient's account of the symptoms (ensure that it is the patient's view and not that of another, such as a carer or parent), that is the subjective symptoms; and the objective signs – those detected by the skill of the practitioner. The main aim is to obtain a comprehensive, succinct account of the patient's perspective of the presenting symptom(s). There is a need to allow patients sufficient opportunity to describe their symptoms for themselves. The practitioner needs to practise patience and take care not to interrupt inappropriately. If the patient starts to drift, that is the time to interrupt and take control of the situation. Ask specific questions to obtain detail – the interrogative stage of the history taking. If the history is complicated, reflect on the information and recount it back to the patient, to ensure that he or she agrees with your interpretation. Attempt to be systematic and objective. Look for other supporting evidence to the interpretation, ensuring that questions are posed in a simple, unambiguous manner, without technical or medical jargon.

Past medical history

This includes information about the patient's general state of health, childhood illnesses (remember the age of the patient and his or her country of birth), adult illnesses, psychiatric illness, accidents and injuries, and operations and hospitalisations. This information will help you gauge the patient overall, and how he or she views health and disease. It is also important to gain outline information of what investigations have been made during previous hospital admissions or at clinics, so reducing duplication of effort. Procedures or operations should be listed chronologically to help with future additions – they should be collected and reported with dates where possible. There is the need to pursue problems that are related to the underlying present condition or complaint.

Drug/medication history

It is advisable to request this information before the first appointment by advising the patient to present with a list of current medication (prescribed and over-the-counter medicine) and dosage. The drug history may give an indication of current illness. It is important to include home remedies, vitamin/mineral supplements, borrowed medicines, as well as prescription-only medicines (POMs) and over-the-counter (OTC) drugs. The drugs may be the cause of the symptoms (some cases of peripheral neuropathy may be induced by drug therapy), or the withdrawal of a drug therapy may be the reason why symptoms are now apparent (e.g. if the patient has suddenly stopped taking diuretics and suffers from swollen and painful ankles). Details should be obtained about possible drug allergies, to inform any decision about the continuation of a drug therapy. Also ask about other allergies such as hay fever, eczema, asthma, or to latex.

Social history

It is important to establish how the disease or complaint and patient interact at a functional level. Try to establish what the patient's normal daily activities are and how his or her complaint has affected them. Smoking and alcohol consumption are the factors most frequently asked about in this regard, but it is essential that judgements are not implied by the manner in which the questions are asked. It is more difficult but equally important that the use of other related substances is also investigated.

Family history

Information about the health and age of other family members can be useful, particularly where there may be a genetic link to disorders. It may be appropriate to identify age or cause of death of family members such as parents or grandparents.

Review of systems

- *General* – identify factors such as height, weight, recent weight changes, fatigue or fever.
- *Skin* – look for rashes, lumps, sores, itching, dryness, colour changes, or changes in hair or nails. These may indicate systemic conditions such as diabetes or rheumatoid disease.
- *Respiratory* – signs of asthma, bronchitis, emphysema or past history of tuberculosis.
- *Cardiac* – heart trouble, high blood pressure, rheumatic fever, heart murmurs, chest pain, palpitations and results of any heart tests.
- *Urinary* – frequency of urination, polyuria, nocturia, burning pain on urination.
- *Endocrine* – thyroid trouble, heat or cold intolerance, excessive sweating, excessive hunger or thirst.
- *Haematological* – anaemia, easy bruising or bleeding, past transfusions and possible reactions.
- *Neurological* – fainting, blackouts, seizures, weakness, paralysis, numbness, tingling, tremor, involuntary movements.
- *Peripheral vascular* – intermittent claudication, leg cramps, varicose veins.
- *Musculoskeletal* – muscle or joint pains, stiffness, arthritis, gout, backache.

ATTRIBUTES OF SYMPTOMS

Patients may complain of symptoms that are local (e.g. to the foot or toe) or general (e.g. abnormal gait or more widespread aches and pains). Specific detailed questions by the practitioner can elicit the signs of the complaint. This should be a clear, chronological narrative which includes the onset of the problem, the setting in which it manifests, the means by which it presents, and any treatment that has been tried. The principal symptoms should be described using seven basic attributes (Bates 1995):

- location
- quality
- quantity or severity
- timing (onset, duration, frequency)
- setting
- factors which aggravate or relieve
- associated manifestations.

The amount of time spent on each component depends on a number of factors: the communication skills of the patient, underlying problem(s) and the listening skills of the practitioner. It is difficult to know when to interrupt and when to allow the patient to continue before stepping in and asking probing closed questions. It is essential, however, that the full circumstances of the presenting complaint are obtained.

Once the various symptoms have been described, it is good practice to undertake a brief review of the symptoms (Marsh 1999) using a systems enquiry method. This may help to arrange the thoughts of the practitioner, highlight missing information, or give guidance as to how to perform the physical examination in a logical sequence of actions. It is basically a screening method for establishing the areas that require detailed physical examination. When the presenting complaint appears to involve only one system, that system is promoted in importance in the examination and a detailed history of the presenting complaint and a more detailed physical examination of that system are made.

PERFORMING THE PHYSICAL EXAMINATION

How complete should a physical examination of a patient be? This is a common question raised by students as well as experienced practitioners. There is growing concern over how much should be assessed and, therefore, how much should be recorded. There is a growing number of pieces of equipment that many podiatrists are starting to use for routine measurements within their practice. However, concern must be raised about the apparent overreliance on sophisticated equipment, which may have a place in some specialist settings but which, on the whole, is too expensive to become necessary in all clinics. Clinicians should rely first on the physical signs and symptoms to indicate whether a more detailed or rigorous assessment is required, and thereafter refer the patient for the specialist tests, or carry these out themselves at another time. In the majority of cases the simple routine consultation, which consists of physical examination together with the ability to use the assessment tools that we all have (i.e. use of the eyes, ears, hands, nose and common sense), should be sufficient. If more sophisticated equipment is to be used, then practitioners require adequate training not only in the use of the equipment but also in the interpretation of the findings. Doppler ultrasound, which enables the sounds of the foot pulses to be identified and recorded, is becoming a routine practice. However, in untrained hands, this equipment can be used incorrectly and diagnoses may be either wrongly interpreted or missed altogether. The equipment may make podiatrists look more professional and more sophisticated. However, the ability to use the equipment correctly, interpret the results accurately and record clearly is something that should be taken seriously.

Therefore, the answer to the question as to how complete an examination should be depends on the signs and symptoms at presentation. The examination and assessment should be related exclusively to the complaint the patient presents with, unless it is thought that a complete and full examination is required to exclude or include other signs and symptoms noticed during the question phase of the assessment process. For patients who have symptoms related to a specific body part (or foot region), a more limited examination may be more appropriate (Bates 1995).

It is the duty of the practitioner to select the relevant methods to assess the problems as precisely and efficiently as possible. The symptoms, along with the demographic data (age, sex, occupation and previous history) collected, influence that selection and determine what examination is required. Knowledge of disease patterns, and the

practitioner's previous knowledge and experience of other conditions also influence the decision. These are all component parts of the clinical thinking, or reasoning, process. When undertaking the physical examination, a sequence that maximises the practitioner's efficiency while minimising the patient's efforts, yet allows thoroughness by the practitioner, is the best. Two important details need to be considered: the positioning and the exposure of the patient.

'Ideally, the whole limb being examined ought to be exposed, but in practice it is usually sufficient only to expose the leg from above the knee distally.' (Anderson & Black 1997)

This level of exposure should give the practitioner sufficient sight of the main areas of complaint, without requiring exposure that the patient might feel is not justified for a podiatric examination. It is important to be able to palpate and see the knee during the examination, whether the patient is seated or standing (weight bearing). Thus, where possible, trousers should be rolled up to expose the full knee and patella. It is also important that both legs and knees are visible, even when the patient is complaining of problems in only one foot. Comparison, one with the other, is a vital source of data gathering. In most cases patients are examined in a semi-supine position and are positioned at a higher level than the practitioner. However, where a more accurate biomechanical examination is required, the prone or supine position may be adopted. Whatever the position, it should not be uncomfortable for the patient for the duration of that examination. The patient must be able to be relaxed in the position chosen or false data may be gathered. According to Anderson and Black (1997) it is good practice, and ensures that nothing is missed, to adopt a systematic set pattern for the examination, proceeding from the superficial (skin and soft tissues) to the deep structure (bone and joints) and from the local to the general.

The sequence of a comprehensive examination should be: a general survey, mental status, skin, musculoskeletal system, cardiovascular and neurological systems, followed by specific peripheral neurological and vascular systems and the important aspect of footwear (see Ch. 18).

The purpose of this chapter is not to give detailed information about the physical examination, but rather to provide an overview of those aspects likely to be performed in routine clinical practice. More detailed books are available (Merriman & Turner 2002) and there are various journal articles on each aspect of the process.

The general survey should give an overall impression of the patient's general attributes, but these may vary according to socioeconomic status, nutrition, genetic makeup, early illness, gender, and the country and era of birth. The overview should encompass areas such as:

- apparent state of health – robust, acutely or chronically ill, frail
- signs of distress – laboured breathing, wincing, limping, sweating, trembling
- skin colour – pallor, cyanosis, jaundice, rashes, and bruises
- height and build – tall, short, muscular, disproportionate, symmetrical (e.g. Turner's syndrome, child may be of short stature)
- weight by appearance or measurement – emaciated, slender, plump, fat, obese, (although what is the appropriate weight is controversial)
- posture, motor ability and gait – posture, which aids breathing, or pain, ataxia, limp, and paralysis – does the patient walk easily, confidently, balanced?
- dress, grooming, and personal hygiene – excessive amount of clothing may mean hypothyroidism, long sleeves may be to cover rashes or needle marks. Is the patient wearing unusual