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In this creative book, *Neurology for General Practitioners*, written by the eminent neurologist and educator, Roy Beran, we have a text presented at a most appropriate level for general practitioners. The author’s stated objective was to demystify a complex discipline and avoid ‘an overly complicated and patronising cookbook of neurological conditions’. He has certainly achieved this, yet at the same time presents a scholarly text with the imprimatur of an authoritative specialist.

This back-to-basics approach has undoubtedly been influenced by the author’s past experience as a coalface general practitioner in suburban Sydney. This surprising fact would certainly allow the author to identify with and understand the general practice perspective, and it shows! During my long term as medical editor of *Australian Family Physician* I came to know and admire Roy for his ability to swathe through the esoteric verbiage and get to the core issues. Practitioners will be familiar with his neurology series in *Medical Observer*. He is committed to general practice education. I was subsequently delighted with his positive response to my request to act as a reviewer and mentor for the neurological component of *Murtagh’s General Practice*.

In this text Roy Beran has simplified many of the complexities without sacrificing excellence.

The choice of content is particularly pleasing to the general practitioner. Many of the recognisable brain-teasing issues are addressed and this includes the common presenting problems of headache, vertigo, seizures, peripheral neuropathy and muscular disorders; not in great detail but in an economy of words and concepts. As one would expect, the author challenges the practitioner to achieve excellence in diagnostic methodology by adhering to the traditional values of good history taking and physical examination. This emphasis is reflected in the excellent chapters on neurological examination
of higher centres, cranial nerves and the peripheral nervous system. To facilitate our understanding the text is enhanced with first-class simplified illustrations. We are also challenged to think laterally as exemplified by the chapter on ‘non-organic neurological disease’ and other relevant nuances throughout the text, including sections on pain, sleep and lifestyle.

At last we have a commendable, user friendly, but subtly scholarly, text for the general practitioner, who is treated with respect and understanding by an experienced author. The book would be equally appropriate and valuable for students, registrars and other clinicians. It has been my privilege to be invited to write the Foreword, and I can recommend this book with sincere enthusiasm to my colleagues.

**Professor John Murtagh** AM, MBBS, MD, BSc, BEd, FRACGP, DipObstRCOG
Emeritus Professor, Monash University; Professorial Fellow, Department of General Practice, University of Melbourne, Victoria; Guest Professor, Peking University, Beijing; Adjunct Clinical Professor, Graduate School of Medicine, University of Notre Dame, Western Australia; Senior Examiner-Australian Medical Council and Patron of General Practitioners Registrars Association
The writing of this book was a labour of love. It began with my writing an article for the medical broadsheet, *The Medical Observer*. This led from article to article to result in a compilation that reflects my overview of neurology for General Practitioners (GPs).

The last thing GPs needed was an overly complicated and patronising ‘cookbook’ of neurological conditions. They did not need another set of meaningless lists, which included minutiae they would never encounter. Some of my happiest time in medicine was when I was working as a GP in the inner western suburbs of Sydney. It was then that I learnt to respect the role played by GPs in the delivery of healthcare. I learnt to understand that GPs were the vanguard in medicine.

My objective in writing *Neurology for General Practitioners* was to offer these frontline doctors some insight into my approach to neurology. I am reminded of the saying that if one gives a man a meal he is fed for a short time, but if one teaches him how to feed himself he might be fed for life.

This book was conceived as a way of repaying some of the debt that I owe to general practice. I believe it was my FRACGP that allowed me to enter neurological training more than 30 years ago. General practice taught me to accept my responsibility as a doctor, to think laterally and to deal with medicine from first principles rather than from a ‘recipe book’. Lists are necessary to pass exams but medicine is more than rote learning of mindless lists. It is an intellectual challenge, which should be enriching and invigorating.

My hope is that *Neurology for General Practitioners* provides food for thought. My goal is to encourage colleagues to think for themselves. My ambition was to open a few windows or doors for others to pass through so that they may be equally affected by the joy that medicine has to offer.

Throughout my writings I reiterated that this book reflects the idiosyncratic approach of a single doctor. Not everyone will agree with some of my
dogmatic concepts. All I can say in my defence is that these concepts have served me well throughout my years as a clinician. I offer them to those who choose to read this book to accept, reject or modify. If I encourage just a few colleagues to renew their love of learning, which motivated them to be coal-face clinicians, then I have written a successful book.

I thank you for taking the time to read my offering and sincerely ask for feedback. I truly hope that at least some of you find this book worthwhile and that I can benefit from your insights to improve it into the future.

Roy G Beran

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Acknowledgements

This book has been many years in evolution, dating back to my time in general practice with Ewen Loxton and Roger Davidson in Enmore, Sydney. Ewen and Roger had a well-established practice that taught me to appreciate family medicine. During this time Ric Day and Don Frommer from St Vincent’s Hospital, Sydney tutored me, for which I will be eternally grateful.

I moved to Adelaide where people like Dick Rischbeith, Andrew Black, Paul Hicks, Jim Manson and Jeremy Hallpike helped train me in neurology. Graham Schapel introduced me to clinical pharmacology, which led into clinical trials. I returned to Sydney to undertake my doctorate with Professor Ian Webster, the founding Professor of Community Medicine at the University of New South Wales (UNSW), and Professor James W Lance, the first UNSW Professor of Neurology. Having a combined appointment in community medicine and neurology is a very rare opportunity, which should not be undervalued. Professor Lance taught me never to accept anything unless its rationale made sense, and Professor Webster taught me that a commitment to community service was mandatory. I hope this book reinforces those views, although my teachers may not endorse all my hypotheses. An enduring friend from this time is Paul Spira, with our latest collaboration published in 2011. Another friend from this time is Rod Mackenzie, who introduced me to sleep medicine.

I was an intern at Liverpool Hospital, Sydney in 1973, and I am still there almost four decades later. From one neurologist, Tony Broe, who came as needed and later became a foundation Professor of Geriatrics, it grew to two, namely David Rail and myself. David always questioned what others took for granted, with most interest in chaos theory. What could be more chaotic than the road I have travelled in preparation for this book? The Department expanded, with some good friends moving on, to now claim eleven neurologists. I thank all these colleagues for their encouragement and collegial
friendship. I was dubbed ‘Uncle Roy’ and I hope this book reflects the views of an elderly uncle for my friends in general practice. One person who has been like an ‘uncle’ to me is Frank Vajda, who was always ready to advise and criticise. I know that I have omitted names of very important friends and colleagues who helped my career and I beg their forgiveness for the oversight.

The most important recognition must go to my beautiful, devoted, intelligent and wonderful wife, Maureen, who steadfastly stood by me since my last year as a medical student. She supported me as a GP, while preparing for the RACP exams, during my neurological training, while working for my doctorate and later as my practice manager. Her intellect, enthusiasm and support are unique, and without her I could not have achieved half of what I consider a very proud and worthwhile career. I must also acknowledge my four beautiful children, their partners and my grandchildren, who helped make all of this worthwhile.

Having acknowledged those doctors and family members who contributed to my career, an acknowledgement also must go to the wonderful team who has worked with me, be it in my private rooms or within the hospital. They are like family to me.

Final acknowledgement must go to the thousands of patients who allowed me to be their doctor—be it as a GP, in my younger years, or as a neurologist.
INTRODUCTION

The neurological examination is really no different to any other medical examination except that it appears more impressive for the novice. There is a formula that allows maximal yield from the process.

This chapter will offer discussion of more than just the examination and will cover how to conduct the neurological diagnostic consultation.

HISTORY

The most important component of the neurological consultation is a detailed history. Many neurological illnesses lack absolute diagnostic tests and may rely exclusively on the history. It follows that the history must be as comprehensive and searching as possible.

While it is important to listen to what the patient offers as the main presenting complaint, it is equally important not to take this at ‘face value’. Patients can believe all bad headaches are migraines, all disequilibrium is vertigo and all loss of consciousness is a seizure. Nothing could be further from the truth. Patients should be advised to avoid jargon and diagnostic terminology, as far as possible. Severe tension-type headache is far more common than is migraine; loss of balance due to upper respiratory tract infection and blocked Eustachian tube is more common than is true vertigo; and syncope is far more common than is seizure.

Concurrent with overuse of jargon is the use of ambiguous and ill-defined terminology, such as dizziness, giddiness, numbness, blackout or even double vision. It is imperative to ensure that message sent is the same as message received. It follows that if a term can have multiple meanings, both the patient...
and clinician must agree on the meaning to be adopted. An example of this may be ‘dizziness’, which may mean true vertigo but could also mean light-headedness, loss of balance, disequilibrium, failure to think clearly, or even having a ‘flu-like’ heavy headedness. ‘Numbness’ can mean loss of sensation, a feeling of heaviness of a limb, pins and needles dysesthesia, impaired movement of a limb or digits with loss of dexterity, or something quite different. It follows that the doctor must interrogate the patient to be sure that both are ‘reading from the same text’. Patients may complain that the doctor doesn’t believe them so it is important to be reassuring. It helps to explain the need for clarity and for avoidance of ambiguity.

Patients often misinterpret symptoms, such as reporting loss of vision in one eye, when what has happened is loss of vision in a visual field, such as homonymous hemianopia. The distinction is very important as monocular loss of vision may be amaurosis fugax, caused by impaired vascular supply to the eye as may occur with temporal (giant cell) arteritis. Monocular loss of vision is rostral, distal to the optic chiasm, while hemianopia is caudal, proximal to the chiasm. When a patient reports loss of vision in one eye it is important to ask if they have tested each eye individually, namely if covering one eye caused total loss of vision while covering the other eye allowed clear vision. This implies that covering the good eye caused binocular loss of vision, while uncovering it allowed the unaffected eye to see normally. Many patients believe left vision comes from the left eye and right vision from the right. With hemianopia it doesn’t matter which eye is covered as the visual loss is the same.

With any symptom, it is important to get a clear description of what actually happened without any ambiguity. Much of this is covered in individual chapters on specific topics. Once one understands the true nature of the actual symptom, ‘What is the problem’ (the first ‘W’), it is time to explore the other three ‘W’s—Where, When and Why. ‘Where’ is ‘where in the body’ (such as focal, unilateral or bilateral) and whether the demarcation is anatomically sound. ‘When’ asks in what situations does the symptom occur; for instance, provocative factors. An example of this is the use of alcohol, which differentiates between tension-type headaches that may be relieved by alcohol, and migraines, which may be provoked or exacerbated by alcohol. It seeks causes, such as stress, which is also important in tension-type headaches and other conditions such as benign essential tremors. ‘Flashing lights’ are a hallmark of photically induced seizures, and benign paroxysmal positional vertigo is provoked by rolling over in bed. ‘Why’ may include auxillary factors that might be important, such as exposure to toxic agents, trauma or genetic predisposition with positive family history.

Diagnosis is much easier if one knows which questions to ask. The first symptoms of Parkinson’s disease may be difficulty getting out of a low chair or a low car seat, such as a sports car, or trouble turning over in bed at night. Much of this subtlety in history taking comes with experience but just asking the patient ‘What did you first notice wrong?’ or ‘When did you first notice
things were not right?’ will help. Given a chance and forced to describe symptoms in simple words rather than using jargon, which is often misunderstood by the patient, the description in plain language will greatly improve the diagnostic process.

Before leaving the discussion of history, it is important to set out the formal approach to the taking of an adequate history (see Table 1.1).

**TABLE 1.1 The formal approach to taking a history**

<table>
<thead>
<tr>
<th>History</th>
<th>Area covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presenting symptom</td>
<td>What caused the patient to seek medical attention?</td>
</tr>
<tr>
<td>History of present illness</td>
<td>Detailed history of events leading up to the presenting symptom</td>
</tr>
<tr>
<td>(the 4 ‘W’s)</td>
<td>i  <strong>What</strong> (presenting complaint) is causing the patient to go to the doctor? (description of the symptoms and their evaluation)</td>
</tr>
<tr>
<td></td>
<td>ii  <strong>Where</strong> in the body?</td>
</tr>
<tr>
<td></td>
<td>• focal, generalised, unilateral or bilateral</td>
</tr>
<tr>
<td></td>
<td>• radiation</td>
</tr>
<tr>
<td></td>
<td>• is it anatomically sound?</td>
</tr>
<tr>
<td></td>
<td>iii <strong>When?</strong></td>
</tr>
<tr>
<td></td>
<td>• provocative factors</td>
</tr>
<tr>
<td></td>
<td>• possible causes</td>
</tr>
<tr>
<td></td>
<td>• situations in which symptoms occur</td>
</tr>
<tr>
<td></td>
<td>iv  <strong>Why?</strong></td>
</tr>
<tr>
<td></td>
<td>• auxiliary factors often found in past and personal history</td>
</tr>
<tr>
<td>Personal history</td>
<td>i  History of smoking</td>
</tr>
<tr>
<td></td>
<td>ii  Alcohol consumption</td>
</tr>
<tr>
<td></td>
<td>iii  Medications: name, strength, dosage</td>
</tr>
<tr>
<td></td>
<td>iv  Medical past history</td>
</tr>
<tr>
<td></td>
<td>v   Surgical past history</td>
</tr>
<tr>
<td></td>
<td>vi  Psychosocial history as may be relevant to the complaint</td>
</tr>
<tr>
<td>Symptom review</td>
<td>History covering symptoms relevant to other organs</td>
</tr>
</tbody>
</table>

**EXAMINATION**

The examination starts long before the patient reaches the consultation room. An observant receptionist may diagnose sleep apnoea, with excessive daytime sleepiness, before the patient has seen the doctor. An experienced receptionist will usually identify patients with behaviour disorder in the waiting room. A good receptionist will share these thoughts with the doctor.
As already stated, difficulty getting out of a chair may alert the doctor for Parkinson’s disease. A wide-based gait, looking like a drunken sailor, may suggest cerebellar disease. A white stick is self-evident for visual impairment and a hearing aid may be important for the patient complaining of ‘vertigo’. There are many diagnostic gaits, such as the stooped, shuffling, unsteady gait of the Parkinsonian; the hemiparetic gait of the stroke patient; or even the flamboyant, brazen gait of the patient with a psychological disorder.

Similarly language, facial expression or facial asymmetry, ptosis, dystonic posturing or the way in which a walking aid is used (which should be different for balance problems or pain support) all provide diagnostic tools. These provide direction for the consultation. They should alert the doctor if the patient fails to mention something that is important. An example of this is the patient who complains of an unprovoked fall but shows Parkinsonian gait, expressionless face, softly spoken voice, appears younger than the stated age and is moving slowly. The astute doctor will have made the diagnosis before the consultation has commenced: the cause of the fall probably will be ‘failed righting reflexes’. The consultation will then focus on this diagnosis and try to exclude the potential differential diagnoses.

In the majority of neurological cases the diagnosis is obvious once the history has been taken. This is especially so if the clinician has been observant both before the consultation (as the patient moves from the waiting area to the consultation room) and during history taking. In most cases the physical examination is largely unnecessary other than to reassure the patient that the doctor is both competent and diligent. If there is not a strong suspicion of the provisional diagnosis prior to commencing physical examination, it is unlikely that the examination will provide the answer and the missing clue. The examination should confirm the expected findings. The competent neurologist will have anticipated the findings before examining the patient. This translates into students being very impressed because the doctor can afford to be flamboyant in demonstrating the signs and even suggesting additional techniques that the doctor knows will be positive. Concurrently, patients are impressed when the doctor can predict clinical findings, thereby reassuring patients that they are in good hands.

Despite dismissing the need for physical examination, only a foolish doctor would not carry it out. It is part of patient expectation and, hence, part of the mystique that is medicine. It may also uncover other problems unrelated to the presenting complaints, such as goitre, cardiac murmur or skin lesions.