

Sample

The Authors

Foreword

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Preface

Chapter 46: Hoarseness

The authors



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John Murtagh was a science master teaching chemistry, biology and physics in Victorian secondary schools when he was admitted to the first intake of the newly established Medical School at Monash University, graduating in 1966. Following a comprehensive postgraduate training program, which included surgical registrarship, he practised in partnership with his wife, Dr Jill Rosenblatt, for 10 years in the rural community of Neerim South, Victoria.

He was appointed Senior Lecturer (part-time) in the Department of Community Medicine at Monash University and eventually returned to Melbourne as a full-time Senior Lecturer. He was appointed to a professorial chair in Community Medicine at Box Hill Hospital in 1988 and subsequently as chairman of the extended department and Professor of General Practice in 1993 until retirement from this position in 2010. He now holds teaching positions as Emeritus Professor in General Practice at Monash University, Adjunct Clinical Professor, University of Notre Dame and Professorial Fellow, University of Melbourne. He achieved the Doctor of Medicine degree in 1988 for his thesis 'The management of back pain in general practice'.

He was appointed Associate Medical Editor of *Australian Family Physician* in 1980 and Medical Editor in 1986, a position he held until 1995. In 1995 he was awarded the Officer of the Order of Australia for services to medicine and to medical education in the field of general practice and to professional groups.

One of his numerous publications, *Practice Tips*, was named as the British Medical Association's Best Primary Care Book Award in 2005. In the same year John Murtagh was awarded the inaugural David de Kretser medal from Monash University for his exceptional contribution to the Faculty of Medicine, Nursing and Health Sciences over a significant period of time. Members of the Royal Australian College of General Practitioners may know that the honour of the namesake of the College library was bestowed upon him. In 2018 he was awarded the Australian Medical Association's Gold Medal for exceptional and long-standing commitment and contribution to general practice and advancing the profession through medical education.

Today John Murtagh continues to enjoy active participation in medical education activities. His vast experience with all medical groups has provided him with tremendous insights into their needs, which is reflected in the culminated experience and wisdom of *John Murtagh's General Practice*.



Dr Jill Rosenblatt

MBBS, FRACGP, DipObstRCOG, GradDipAppSci

Jill Rosenblatt graduated in medicine from the University of Melbourne in 1968. Following terms as a resident medical officer she entered rural practice in Neerim South, Victoria, in partnership with her husband John Murtagh. She was responsible for inpatient hospital care in the Neerim District Bush Nursing Hospital and in the West Gippsland Base Hospital. Her special interests were obstetrics, paediatrics and anaesthetics. Jill has also had a special interest in Indigenous culture and health since she lived at Koonibba Mission in South Australia, where her father was Superintendent.

After leaving rural life she came to Melbourne and joined the Ashwood Medical Group, where she practised comprehensive general medicine, and care of the elderly in particular. She was appointed Adjunct Senior Lecturer in the Department of General Practice at Monash University in 1980 and a teacher in the GP registrar program.

She gained a Diploma of Sports Medicine (RACGP) in 1985 and a Graduate Diploma of Applied Science in Nutritional and Environmental Medicine from Swinburne University of Technology in 2001.

Jill Rosenblatt brings a wealth of diverse experience to the compilation of this textbook. This is based on 50 years of experience in rural and metropolitan general practice. In addition, she has served as clinical assistant to the Shepherd Foundation, the Menopause Clinics at Prince Henry's Hospital and Box Hill Hospital and the Department of Anaesthetics at Prince Henry's Hospital. Jill has served as an examiner for the RACGP for 39 years and for the Australian Medical Council for 16 years. She was awarded a life membership of the Royal Australian College of General Practitioners in 2010 and a Distinguished Service award of the College in 2014.



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Translation

Justin Coleman graduated from Melbourne University Medical School in 1992 and has subsequently worked

as a rural GP in Victoria, the remote NT and Brisbane, primarily in Aboriginal and Torres Strait Islander health.

Soon after graduating, Justin began writing for the GP newspaper *Medical Observer* and hasn't stopped since. One of his weekly columns, 'Handy Hints for GPs', ran for 13 years. He writes regular humorous opinion columns.

Justin is a prolific writer for medical and non-medical readerships; he has published well over 1500 medical articles in around 50 different newspapers, magazines, books and journals. For five years he served as President of the Australasian Medical Writers Association and he regularly runs writing workshops for medical writers and academics.

Since completing a Master of Public Health (UQ 2011, first class honours), Justin has dedicated much of his career to educating other GPs about how to improve various aspects of medical practice. His interests include evidence-based medicine, the rational use of medical tests and treatments, and dealing with uncertainty during a GP consultation. He represents the RACGP on matters pertaining to conflicts of interest and fiercely guards his own independence, never having accepted payment from a pharmaceutical or medical device company.

Over three decades, Justin has supervised hundreds of medical students and GP registrars. He has taught in the medical schools of four universities and for a dozen medical education organisations.

Justin edited his first medical book 25 years ago and has remained a medical editor ever since. He completed a Writing and Editing program in 2010 (UQ, first class honours). He was editor of the *Diabetes Management Journal*, writes and does peer reviews for the MJA, AJGP (formerly AFP) and BMJ, and is a member of the Australasian Health and Medical journal Editors' Network (AHMEN).

Justin was honoured to be invited by Professor John Murtagh to help edit Australia's seminal textbook on general practice. This represents the grand intersection of every one of his aforementioned interests.



Dr Clare Murtagh

MBBS, FRACGP

General Practitioner, Sydney

Clare Murtagh completed her medical studies at Monash University in 2007 and spent her early career working in hospitals in Geelong and rural Victoria. Following experience as a medical officer for trekkers in Nepal, she moved to Sydney where she completed her General Practice training in 2013.

A passionate generalist, Clare has special interest in dermatology, women's health and paediatrics. She holds a Diploma of Dermatology and Certificates in Sexual and Reproductive Health, and Medical Education. While practising at Your Doctors in Sydney's inner west, she has cared for a wide variety of patients and is an antenatal shared care provider.

In recent years, Clare has gained increasing experience in medical education as a supervisor of training GPs and as an examiner for the RACGP. She has worked as a medical educator at GP Synergy and is a lecturer on dermatology.

Clare has been an enthusiastic contributor to the 'Women's health', 'Sexual health' and 'Problems of the skin' sections of the last three editions of *Murtagh's General Practice*. As the daughter of co-authors John Murtagh and Jill Rosenblatt, she has benefited from their mentorship and appreciates the genesis and philosophy of the editorial direction of the textbook.

Foreword

In 1960 a young schoolmaster, then teaching biology and chemistry in a secondary school in rural Victoria, decided to become a country doctor. He was part of the first intake of students into the Medical School of the newly established Monash University, and at the end of his six-year undergraduate medical course and subsequent intern and resident appointments his resolve to practise community medicine remained firm. After more than a decade in country practice with his life partner, Dr Jill Rosenblatt, during which he meticulously documented the cases he treated, in 1977 John Murtagh took up an academic position in the new Department of General Practice at Monash University. He subsequently moved through the ranks of Senior Lecturer, Associate Professor and Professor, now enjoying the title of Emeritus Professor.

Through his writing, pedagogy and research, John Murtagh became a national and international authority on the content and teaching of primary care medicine. It was during his tenure as Medical Editor of *Australian Family Physician* from 1986 to 1995 that the journal became the most widely read medical journal in Australia.

This textbook provides a distillate of the vast experience gained by a once rural doctor, whose career has embraced teaching; whose abiding interest is in ensuring that disease, whether minor or life-threatening, is recognised quickly; and whose concern is that strategies to match each contingency are well understood.

The first edition of this book, published in 1994, achieved remarkable success on both the national and international scene. The second and third editions built on this initial success and the book has become known as the 'bible of general practice' in Australia. In addition to being widely used by practising doctors, it has become a popular and standard textbook in several medical schools and also in the teaching institutions for alternative health practitioners, such as chiropractic, naturopathy and osteopathy. In particular, medical undergraduates and graduates struggling to learn English have found the book relatively comprehensible. The fourth and fifth editions were updated and expanded, retaining the successful, user-friendly format, including clinical photography and illustrations in colour. Dr Jill Rosenblatt joined John in authoring and editing the fifth, sixth and seventh editions. Two new author/editors in Dr Justin Coleman and Dr Clare Murtagh subsequently joined the panel.

Having known John and worked with him for more than three decades, I feel privileged to write this foreword to the eighth edition, adding to earlier forewords by the late Professor Schofield. During this 27-year period I have watched each edition blossom, only to be superseded

by a bigger and better replacement. John Murtagh has become a legend nationally and internationally, and in a 2012 *Medical Observer* survey he was voted the most revered Australian doctor, ahead of Fred Hollows and Victor Chang. Most recently, in 2018 John was awarded the Australian Medical Association's highest honour, the AMA Gold Medal for his 'contribution to medicine and general practice as a doctor and educator'. In addition, in 2019 he became an Officer of the Order of Australia (AO) for his contribution to scholarship in General Practice, superseding his award of Member of the Order of Australia (AM) awarded in 1996.

This edition retains the time-honoured framework that has made it the seminal text for GPs, GP registrars and students of general practice worldwide. It is to general practice what 'Harrisons' is to internal medicine.

Although this edition retains the same format, it has a number of significant changes and additions, including a strong emphasis on viral infections including the coronaviruses. Reflecting John's lifelong commitment to medical education, he has included more visual material, more practical tips for day-to-day clinical practice and importantly, more on therapeutics supported by references to *Therapeutic Guidelines*.

The expanded volume has necessitated a significant increase in references to original sources to substantiate the evidence base within this text. As expected in contemporary texts, there is also an abundance of online resources.

John Murtagh's works, including this text, have been translated into Italian by McGraw-Hill Libri Italia s.r.l., Portuguese by McGraw-Hill Nova Iorque and Spanish by McGraw-Hill Interamericana Mexico and also into Chinese, Greek, Polish and Russian. In 2009 *John Murtagh's General Practice* was chosen by the Chinese Ministry of Health as the textbook to aid the development of general practice in China. Now, 27 years since its beginning, the text is available in 13 languages, most recently adding Farsi and Turkish translations. A truly remarkable achievement.

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Dean of Medicine

Monash University, 1977–88

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For decades, *Therapeutic Guidelines* (TG) has set the gold standard for practice guidelines, beginning with the benchmark antibiotic guidelines. The panels for the various disciplines include experts from many fields whose collective wisdom and evidence base in their deliberations inspires confidence and authority for treatment decisions. General practitioners also have input in the panels. The authors of *Murtagh's General Practice* wish to thank Therapeutic Guidelines Limited for the outstanding information which provides an authoritative framework for our publication. *Therapeutic Guidelines* is the ultimate therapeutic reference across all categories, from analgesics and antibiotics to ulcers and wound management.

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Dr Peter Couran: Figure 113.15, p. 1260.

Dr John Troller: Figure 116.9, p. 1297.

Preface

The discipline of general practice has become complex, expansive and challenging, but nevertheless remains manageable, fascinating and rewarding. *John Murtagh's General Practice* attempts to address the issue of the base of knowledge and skills required in modern general practice. Some of the basics of primary healthcare remain the same. In fact, there is an everlasting identity about many of the medical problems that affect human beings, be it a splinter under a nail, a sty of the eyelid, a terminal illness or simply stress-related anxiety. Many of the treatments and approaches to caring management are universal and timeless.

This text covers a mix of traditional and modern practice with an emphasis on the importance of clinical reasoning, early diagnosis, strategies for solving common presenting problems, continuing care, holistic management and 'tricks of the trade'. One feature of our discipline is the patient who presents with undifferentiated problems featuring an overlap of organic and psychosocial components. There is the constant challenge to make an early diagnosis and identify the ever-lurking, life-threatening illness. Hence the 'must not be missed' catch cry throughout the text. To reinforce this awareness, 'red flag pointers' to serious disease are included where appropriate. The general practice diagnostic model, which pervades all the chapters on problem solving, is based on the authors' experience, but readers can draw on their own experience to make the model work effectively for themselves.

This eighth edition expands on the challenging initiative of diagnostic triads (or tetrads), which act as a brief *aide-memoire* to assist in identifying a disorder from three (or four) key symptoms or signs. A particular challenge in the preparation of the text was to identify as much appropriate and credible evidence-based information as relevant. This material, which still has its limitations, has been combined with considerable collective wisdom from experts, especially from the *Therapeutic Guidelines* series. A key objective of this publication is to achieve a balance between science and the art of general practice. To provide updated accuracy and credibility, the authors have had the relevant chapters peer reviewed by independent experts in the respective disciplines. These consultants are acknowledged in the reviewers section. The revised editions also have the advantage of co-authorship from experienced general practitioner Dr Jill Rosenblatt. Additional authors include Dr Clare Murtagh, a general practitioner with experience in medical education, and Dr Justin Coleman, past president of the Australasian Medical Writers Association with special interests in 'Choosing wisely' programs and evidence-based medicine.

A comprehensive book such as this one, which presents a basic overview of primary medicine, cannot possibly cover all the medical problems likely to be encountered. An attempt has been made, however, to focus on problems that are common, significant, preventable and treatable. Recent content includes expanded material on genetic disorders and infectious diseases, particularly coronaviruses and acute respiratory distress syndrome.

John Murtagh's General Practice is written as a user-friendly text with the recent graduate, the international medical graduate and the medical student in mind. However, all primary-care practitioners will gain useful information from the book's content.

Red and yellow flags

Red and yellow flags alert you to potential dangers. Red is the most urgent, but yellow also requires careful consideration.

Yellow flag pointers

This term has been introduced to identify psychosocial and occupational factors that may increase the risk of chronicity in people presenting with acute back pain. Consider psychological issues if:

- abnormal illness behaviour
- 'fear avoidance': concern re pain on activity
- compensation issues
- unsatisfactory restoration of activities
- failure to return to work
- unsatisfactory response to treatment
- treatment refused
- atypical presenting physical signs

Red flag pointers for low back pain

The 'red flag' symptoms or signs (see TABLE 28.2) should alert the practitioner to a serious health problem and thus guide selection of investigations, particularly appropriate imaging of the lumbar spine.

Clinical framework

Clinical framework based on major steps of clinical features, investigations, diagnosis, management and treatment reflects the key activities in the daily tasks of general practitioners.

Seven masquerades checklist

This unique feature of the book reminds you of potential and hidden dangers underlying patient presentations.

Infections of the central nervous system 201

There are three forms of mediated viral encephalitis: direct, delayed (latent) and immune mediated (postinfectious encephalomyelitis).

Toxoplasma gondii

A protozoal infection seen in immunocompromised patients, especially HIV. Refer for specialist advice.

Investigations

- Lumbar puncture: CSF (usually aseptic meningitis)
- CSF PCR for viral studies, esp. HSV, toxoplasma
- CT scan—often shows cerebral oedema
- Gadolinium-enhanced MRI
- EEG—characteristic waves

Treatment

Organise hospitalisation where treatment will be supportive. Suspected herpes simplex encephalitis should be treated with IV aciclovir immediately.

Note: Meningoencephalitis is meningitis plus some parenchymal involvement of brain substance.

1 Autoimmune encephalitis

This is a recently identified group of neuropsychiatric disorders seen typically in young people.⁷ There is a prodrome of fever and headache followed by days or weeks of psychiatric/behavioural problems with bizarre symptoms and movements. It may be related to a paraneoplastic manifestation, e.g. ovarian cancer. Diagnosis is confirmed by blood and CSF antibody testing (anti-NMDA receptor). Specialist referral for diagnosis and specific immunotherapy is appropriate.

1 Brain abscess and subdural empyema^{4,8}

A brain (cerebral) abscess is a focal area of infection in the cerebrum or cerebellum. It presents as a space-occupying intracerebral lesion. Suspect in any patient with a raised intracranial pressure. The infection can reach the brain by local spread or via the bloodstream; for example, endocarditis or bronchiectasis. There may be no clue to a focus of infection elsewhere but it can follow ear, sinus, dental, periodontal or other infection and also a skull fracture. The organisms are polymicrobial, especially microaerophilic cocci and anaerobic bacteria in the non-immunosuppressed. In the immunosuppressed, *Toxoplasma*, *Nocardia* sp. and fungi.

Clinical features

Raised intracranial pressure

- Headache
- Nausea and vomiting

- Altered conscious state
- Papilloedema

Other

- Focal neurological signs such as hemiplegia, dysphasia, ataxia
- Seizures (30%)
- Fever (may be absent)
- Signs of sepsis elsewhere, e.g. teeth, endocarditis

Investigations

- MRI (if available) or CT scan
- FBE, ESR/CRP, blood culture

Note: Lumbar puncture is contraindicated.

Consider endocarditis

Management

Management is urgent neurosurgical referral. Aspiration or biopsy is essential to guide antimicrobial treatment, which may (empirically) include metronidazole IV and a cephalosporin, e.g. ceftriaxone IV. Nocardiosis is treated with other antibiotics.

1 Spinal subdural or epidural abscess⁹

These uncommon focal infections can be extremely difficult to diagnose so an index of suspicion is required to consider such an abscess. The usual organism is *Staphylococcus aureus*.

Clinical features⁸

- Back pain (increasing) ± radiculopathy
- Percussion tenderness over spine
- Evolving neurological deficit, e.g. gradual leg weakness and sensory loss ± fever (may be absent)

Causes

- Associated infection: furuncle, decubitus ulcer, adjacent osteomyelitis, discitis, other
- Back trauma with haematoma
- Post-subdural or epidural anaesthetic block
- One-third is spontaneous

Investigations

- Blood culture
- MRI scan to localise abscess and spinal cord pressure

Management

Urgent neurosurgical referral. Empirical therapy while awaiting culture results may include d/ticloxacillin IV + gentamicin IV or vancomycin IV.

Seven masquerades checklist

Depression, diabetes, drugs, spinal dysfunction and UTI can all cause abdominal pain: acute, subacute or chronic. Abdominal pain and even tenderness can accompany diabetic ketoacidosis. Drugs that can cause abdominal pain are listed in TABLE 24.3.

Spinal dysfunction of the lower thoracic spine and thoracolumbar junction can cause referred pain to the abdomen. The pain is invariably unilateral, radicular in distribution and related to activity. It can be confused with intra-abdominal problems such as biliary disease (right-sided), appendicitis and Crohn disease (right side), diverticular disorder (left-sided) and pyelonephritis.

Diagnostic triads

Key features that may discriminate between one disease and another are clearly presented.



DxT light-brown skin patches + skin tumours + axillary freckles → NF1

Making the most of your book *continued*

Evidence-based research

Evidence-based research is recognised with a full chapter on research in general practice and evidence base, including more on qualitative models. In addition, substantial references are provided for every chapter.



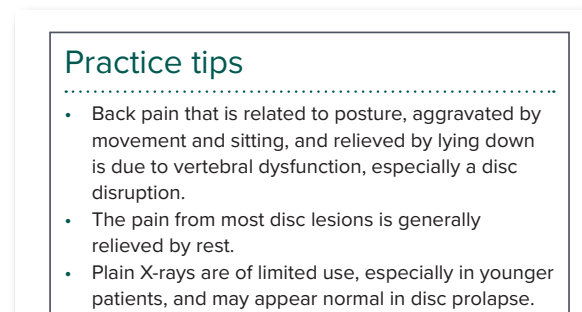
Extensive coverage of paediatric and geriatric care, pregnancy and complementary therapies

Extensive coverage of paediatric and geriatric care, pregnancy and complementary therapies is integrated throughout, as well as devoted chapter content providing more comprehensive information in these areas.



Practice tips

Practice tips consist of key points that are of use in the clinical setting.



Clinical photos provide authentic, visual examples of many conditions and serve as either a valuable introduction or confirmation of diagnosis.



FIGURE 129.5 Cutaneous leishmaniasis in a serviceman after returning from the Middle East

Full colour illustrations are provided, with more than 600 diagrams in the clean, simple style that has proved so popular.



FIGURE 28.5 The slump test: one of the stages

The index has more sub-categories with bold page numbers indicating the main treatment of a topic, enabling you to quickly pinpoint the most relevant information. Page numbers in italics refer to figures and tables. Entries with ‘see *also*’ have cross-references to related, but more specific information on the topic.

Page numbers in **bold** indicate sections or extensive treatment of a topic. Page numbers in *italics* indicate figures or tables.

Entries starting with numbers precede the alphabetical sequence, excepting numbers preceding the names of chemicals, which are ignored in filing. For example: 5-fluorouracil files as fluorouracil.

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Indicates where you can find relevant information from *Murtagh's Patient Education*, eighth edition, to photocopy and hand out to patients.

Hand-out sheets from *Murtagh's Patient Education* 8th edition:

- Backache
- Exercises for your lower back
- Sciatica
- Spondylosis

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Laboratory reference values

These reference values and ranges are given in the system of international units (SI) and may vary from laboratory to laboratory.

An asterisk (*) indicates that paediatric reference ranges differ from the adult range given.

Electrolytes/renal

Sodium	135–145 mmol/L
Potassium*	3.5–5.0 mmol/L
Chloride	95–110 mmol/L
Bicarbonate	23–32 mmol/L
Urea	3–8.0 mmol/L
Creatinine	♀ 50–110; ♂ 60–120 µmol/L
eGFR	>60 mL/min/1.72 m ²
Calcium*	2.10–2.60 mmol/L (total)
Phosphate	0.90–1.35 mmol/L
Magnesium*	0.65–1.00 mmol/L
Uric acid*	♀ 0.12–0.40; ♂ 0.15–0.45 mmol/L

Liver function/pancreas

Bilirubin*	<20 µmol/L (total) <3 µmol/L (direct)
AST*	<40 U/L
GGT*	♀ <30; ♂ <50 U/L
Alkaline phosphatase (ALP)*	25–100 U/L
Total protein	60–80 g/L
Albumin	38–50 g/L
Amylase	30–110 U/L
Lipase	<100 U/L

Glucose

Glucose fasting	3–5.4 mmol/L
Glucose random	3–7.7 mmol/L
HbA1c	4.7–6.1%

Haematology

Hb*	♀ 115–165; ♂ 130–180 g/L
PCV*	♀ 37–47; ♂ 40–54%
MCV*	80–100 fL
Reticulocytes	0.5–2.0%
White cells	4.0–11.0 × 10 ⁹ /L
Platelets	150–400 × 10 ⁹ /L
ESR	<20 mm; <35mm if >70 years
Band neutrophils*	(0.05 × 10 ⁹ /L)
Mature neutrophils*	(2.0–7.5 × 10 ⁹ /L)
Lymphocytes*	(1.0–4.0 × 10 ⁹ /L)
Monocytes*	(0.2–0.8 × 10 ⁹ /L)
Eosinophils*	(0.0–0.4 × 10 ⁹ /L)
Folate	serum 7–45 nmol/L, red cell 360–1400 nmol/L
s Vitamin B12	(150–700 pmol/L)

Coagulation

Bleeding time	2.0–8.5 min
Fibrinogen	2.0–4.0 g/L
Prothrombin time	sec.
Prothrombin ratio INR	1.0–1.2
APTT	25–35 sec
D-dimer	<500 mg/mL

Others

s Creatine phospho kinase	<90 U/L
s Lead	<2 µmol/L
s C-reactive protein	<10 mg/L
Vitamin D	>75 mmol/L

Cardiac/lipids

Troponin I or T	<0.1 ug/L
CK total	♀ <200; ♂ <220 U/L
CK-MB	<25 U/L
Cholesterol*	<5.5 mmol/L
Triglycerides*	<1.7 mmol/L
HDL cholesterol	♀ 1–2.2; ♂ 0.9–2.0 mmol/L
LDL cholesterol	2–3.4 mmol/L

Thyroid tests

Free T ₄	10.0–25.0 pmol/L
Ultra-sensitive TSH*	0.4–5.0 mU/L
Free T ₃	3.3–8.2 pmol/L

Other endocrine tests

s Cortisol	8 am 130–700 nmol/L
	4 pm 80–350 nmol/L
FSH	1–9 IU/L (adult ♀) 10–30 IU/L (ovulation) 4–200 IU/L (postmenopausal)
Oestradiol menopausal	<200 pmol/L
Testosterone	♀ <3.5; ♂ 10–35 nmol/L

Tumour markers

PSA	0–1.0 mcg/L
CEA	<7.5 mcg/L
AFT	<10 mcg/mL
CA-125	<35 U/mL

Iron studies

Ferritin	♀ 15–200; ♂ 30–300 mcg/L
Iron	10–30 µmol/L
Iron-binding capacity	45–80 µmol/L
Transferrin	2–3.5 g/L
Transferrin saturation	♀ 15–45%; ♂ 15–55%

Blood gases/arterial

pH*	7.38–7.43
P _a O ₂ *	85–105 mmHg
P _a CO ₂ *	36–44 mmHg
Bicarbonate*	20–28 mmol/L
Base excess*	–3 to +3 mmol/L

Normal values: worth knowing by heart

The following is a checklist that can be used as a template to memorise normal quantitative values for basic medical conditions and management.

Vital signs (average)	< 6 months	6 months – 3 years	3 – 12 years	Adult
Pulse	120–140	110	80 – 100	60 – 100
Respiratory rate	45	30	20	14
BP (mmHg)	90/60	90/60	100/70	≤ 130/85

Children's weight	1–10 years
Rule of thumb:	Wt = (age + 4) × 2 kg

Fever—temperature (morning)^(a)

(a) There is considerable diurnal variation in temperature so that it is higher in the evening (0.5–1°C). I would recommend the definition given by Yung et al. in *Infectious Diseases: a Clinical Approach*: 'Fever can be defined as an early morning oral temperature > 37.2°C or a temperature > 37.8°C at other times of the day'. Dangerous ≥ 41.5°C.

Oral > 37.2°C

Rectal > 37.7°C

Diabetes mellitus—Diagnostic criteria: blood sugar

Random > 11.1 mmol/L

1 reading if symptomatic

2 readings if asymptomatic

Fasting > 7.0 mmol/L

or the 2 values from an oral GTT

Hypokalaemia

Serum potassium < 3.5 mmol/L

Jaundice

Serum bilirubin > 19 µmol/L

Hyperkalaemia

Serum potassium > 5.0 mmol/L

Hypertension

BP > 140/90 mmHg

Alcohol excessive drinking

Males > 4 standard drinks/day

Females > 2 standard drinks/day

Alcohol health guidelines (NHMRC)

Males and females ≤ 10 standard drinks/week
< 4 standard drinks/occasion

Anaemia—haemoglobin

Males < 130 g/L

Females < 120 g/L

Body mass index Wt (kg)/Ht (m²)

Normal 20–25

Overweight > 25

Obesity > 30

Abbreviations

AAA	abdominal aortic aneurysm	APF	Australian pharmaceutical formulary
AAFP	American Academy of Family Physicians	APH	ante-partum haemorrhage
ABA	Australian Breastfeeding Association	APRI	AST to platelet ratio index
ABC	airway, breathing, circulation	aPTT	activated partial thromboplastin time
ABCD	airway, breathing, circulation, dextrose	AR	autosomal recessive
ABFP	American Board of Family Practice	ARB	angiotension II receptor blocker
ABI	ankle brachial index	ARC	AIDS-related complex
ABO	A, B and O blood groups	ARDS	adult respiratory distress syndrome
AC	air conduction	ARR	absolute risk reduction
AC	acromioclavicular	ART	anti-retroviral therapy
ACAH	autoimmune chronic active hepatitis	ASD	atrial septal defect
ACE	angiotensin-converting enzyme	ASIS	anterior superior iliac spine
ACL	anterior cruciate ligament	ASOT	antistreptolysin O titre
ACR	albumin creatine ratio	AST	aspartate aminotransferase
ACTH	adrenocorticotrophic hormone	ATFL	anterior talofibular ligament
AD	aortic dissection	AV	atrioventricular
AD	autosomal dominant	AVM	arteriovenous malformation
ADHD	attention deficit hyperactivity disorder	AZT	azidothymidine
ADLs	activities of daily living	BC	bone conduction
ADT	adult diphtheria vaccine	BCC	basal cell carcinoma
AF	atrial fibrillation	BCG	bacille Calmette–Guérin
AFI	amniotic fluid index	bDMARDs	biological disease modifying antirheumatic drugs
AFP	alpha-fetoprotein	BMD	bone mass density
AI	aortic incompetence	BMI	body mass index
AICD	automatic implantable cardiac defibrillator	BNP	B-type natriuretic peptide
AIDS	acquired immunodeficiency syndrome	BOO	bladder outlet obstruction
AIIRA	angiotension II(2) reuptake antagonist	BP	blood pressure
AKF	acute kidney failure	BPH	benign prostatic hyperplasia
ALE	average life expectancy	bpm	beats per minute
ALL	acute lymphocytic leukaemia	BPPV	benign paroxysmal positional vertigo
ALP	alkaline phosphatase	BSE	breast self-examination
ALT	alanine aminotransferase	Ca	carcinoma
ALTE	apparent life-threatening episode	CABG	coronary artery bypass grafting
AMI	acute myocardial infarction	CAD	coronary artery disease
AML	acute myeloid leukaemia	CAP	community-acquired pneumonia
ANA	antinuclear antibody	CBE	clinical breast examination
ANCA	antineutrophil cytoplasmic antibody	CBT	cognitive behaviour therapy
ANF	antinuclear factor	CCB	calcium-channel blocker
a/n/v	anorexia/nausea/vomiting		
AP	anterior–posterior		

CCF	congestive cardiac failure	CR(K)F	chronic renal (kidney) failure
CCP	cyclic citrullinated peptide	CRP	C-reactive protein
CCT	controlled clinical trial	CSF	cerebrospinal fluid
CCU	coronary care unit	CSFM	chloroquine-sensitive falciparum malaria
CD ₄	T helper cell	CSIs	COX-2 specific inhibitors
CD ₈	T suppressor cell	CSU	catheter specimen of urine
CDT	combined diphtheria/tetanus vaccine	CT	computerised tomography
CEA	carcinoembryonic antigen	CTD	connective tissue disorder
CFL	calcaneofibular ligament	CTG	cardiotocograph
CFS	chronic fatigue syndrome	CTS	carpal tunnel syndrome
cfu	colony forming unit	CVA	cerebrovascular accident
CHC	combined hormonal contraception	CVS	cardiovascular system
CHD	coronary heart disease	CXR	chest X-ray
CHF	chronic heart failure		
CI	confidence interval	DAA	direct-acting antivirals
CIN	cervical intraepithelial neoplasia	DBP	diastolic blood pressure
CJD	Creutzfeldt–Jakob disease	DC	direct current
CK	creatinine kinase	DDAVP	desmopressin acetate
CK–MB	creatinine kinase–myocardial bound fraction	DDH	developmental dysplasia of the hip
CKD	chronic kidney disease	DDP	dipeptidyl peptidase
CKF	chronic kidney failure	DEXA	dual energy X-ray absorptiometry
CMC	carpometacarpal	DHA	docosahexaenoic acid
CML	chronic myeloid leukaemia	DHEA	dihydroepiandrosterone
CMV	cytomegalovirus	DI	diabetes insipidus
CNS	central nervous system	DIC	disseminated intravascular coagulation
co	compound	DIDA	di-imino diacetic acid
COAD	chronic obstructive airways disease	DIMS	disorders of initiating and maintaining sleep
COC	combined oral contraceptive	DIP	distal interphalangeal
COCP	combined oral contraceptive pill	dL	decilitre
COMT	catechol-O-methyl transferase	DMARDs	disease modifying antirheumatic drugs
COPD	chronic obstructive pulmonary disease	DNA	deoxyribose-nucleic acid
COX	cyclooxygenase	DOACs	direct acting anti-coagulants
CPA	cardiopulmonary arrest	DOM	direction of movement
CPAP	continuous positive airways pressure	DRE	digital rectal examination
CPK	creatine phosphokinase	DRABC	defibrillation, resuscitation, airway, breathing, circulation
CPPD	calcium pyrophosphate dihydrate	drug	bd—twice daily; tid, tds—three times daily; qid—four times daily
CPR	cardiopulmonary resuscitation	dosage	
CPS	complex partial seizures	ds	double strand
CR	controlled release	DS	double strength
CRD	computerised reference database system	DSM	diagnostic and statistical manual (of mental disorders)
CREST	calcinosis cutis; Raynaud phenomenon; oesophageal involvement; sclerodactyly; telangiectasia	DU	duodenal ulcer
CRF	chronic renal failure	DUB	dysfunctional uterine bleeding
CRFM	chloroquine-resistant falciparum malaria	DVT	deep venous thrombosis
CRH	corticotrophin-releasing hormone	DxT	diagnostic triad

EAR	expired air resuscitation
EBM	Epstein–Barr mononucleosis (glandular fever)
EBNA	Epstein–Barr nuclear antigen
EBV	Epstein–Barr virus
ECC	external chest compression
ECG	electrocardiogram
ECT	electroconvulsive therapy
ED	emergency department
EDD	expected due date
EEG	electroencephalogram
ELISA	enzyme-linked immunosorbent assay
EMG	electromyogram
ENA	extractable nuclear antigen
EO	ethinyloestradiol
EPA	eicosapentaenoic acid
EPL	extensor pollicis longus
EPS	expressed prostatic secretions
ER	external rotation
ESRF	end-stage renal failure
ESR(K)F	end-stage renal (kidney) failure
ERCP	endoscopic retrograde cholangiopancreatography
esp.	especially
ESR	erythrocyte sedimentation rate
ET	embryo transfer
ETT	endotracheal tube
FAD	familial Alzheimer disease
FAI	femoroacetabular impingement
FAP	familial adenomatous polyposis
FB	foreign body
FBE	full blood count
FDIU	fetal death in utero
FDL	flexor digitorum longus
FEV ₁	forced expiratory volume in 1 second
FHL	flexor hallucis longus
fL	femto-litre (10 ⁻¹⁵)
FOBT	faecal occult blood test
FRAX	fracture risk assessment tool
FRC	functional residual capacity
FSH	follicle stimulating hormone
FTA–ABS	fluorescent treponemal antibody absorption test

FTT	failure to thrive
FUO	fever of undetermined origin
FVC	forced vital capacity
FXS	fragile X syndrome
g	gram
GA	general anaesthetic
GABHS	group A beta-haemolytic streptococcus
GBS	Guillain–Barré syndrome
GCA	giant cell arteritis
GESA	Gastroenterological Society of Australia
GFR	glomerular filtration rate
GGT	gamma-glutamyl transferase
GHJ	glenohumeral joint
GI	glycaemic index
GIFT	gamete intrafallopian transfer
GIT	gastrointestinal tract
GLP	glucagon-like peptide
GnRH	gonadotrophin-releasing hormone
GO	gastro-oesophageal
GORD	gastro-oesophageal reflux disease
GP	general practitioner
G-6-PD	glucose-6-phosphate dehydrogenase
GSI	genuine stress incontinence
GU	gastric ulcer
GV	growth velocity
HAV	hepatitis A virus
anti-HAV	hepatitis A antibody
Hb	haemoglobin
HbA	haemoglobin A
anti-HBc	hepatitis B core antibody
HBeAg	hepatitis Be antigen
anti-HBs	hepatitis B surface antibody
HBsAg	hepatitis B surface antigen
HBV	hepatitis B virus
HCG	human chorionic gonadotropin
HCV	hepatitis C virus
anti-HCV	hepatitis C virus antibody
HDL	high-density lipoprotein
HDV	hepatitis D (Delta) virus
HEV	hepatitis E virus
HFA	hydrofluoro alkane
HFM	hand, foot and mouth
HFV	hepatitis F virus
HGV	hepatitis G virus

HHC	hereditary haemochromatosis	IVF	in-vitro fertilisation
HIDA	hydroxy iminodiacetic acid	IVI	intravenous injection
HIV	human immunodeficiency virus	IVP	intravenous pyelogram
HLA-B ₂₇	human leucocyte antigen	IVU	intravenous urogram
HMGCoA	hydroxymethylglutaryl CoA		
HNPCC	hereditary non-polyposis colorectal cancer	JIA	juvenile idiopathic arthritis
		JVP	jugular venous pulse
HPV	human papilloma virus		
HRT	hormone replacement therapy	KA	keratoacanthoma
HSIL	high-grade squamous intraepithelial lesion	KFT	kidney function test
HSP	Henoch–Schönlein purpura	kg	kilogram
HSV	herpes simplex viral infection	KOH	potassium hydroxide
H	hypertension	KS	Kaposi sarcoma
		KUB-CT	kidney ureter bladder scan
IBS	irritable bowel syndrome		
ICE	ice, compression, elevation	LA	local anaesthetic
ICHPPC	International Classification of Health Problems in Primary Care	LABA	long-acting beta agonist
ICS	inhaled corticosteroid	LBBB	left branch bundle block
ICS	intercondylar separation	LBO	large bowel obstruction
ICSI	intracytoplasmic sperm injection	LBP	low back pain
ICT	immunochromatographic test	LCR	ligase chain reaction
IDDM	insulin dependent diabetes mellitus	LDH/LH	lactic dehydrogenase
IDU	injecting drug user	LDL	low-density lipoprotein
IgA	immunoglobulin A	LFTs	liver function tests
IgE	immunoglobulin E	LH	luteinising hormone
IgG	immunoglobulin G	LHRH	luteinising hormone releasing hormone
IgM	immunoglobulin M	LIF	left iliac fossa
IGRA	interferon gamma release assay	LMN	lower motor neurone
IHD	ischaemic heart disease	LNG	levonorgestrel
IHS	International Headache Society	LPC	liquor picis carbonis
IM, IMI	intramuscular injection	LRTI	lower respiratory tract infection
IMS	intermalleolar separation	LSD	lysergic acid
inc.	including	LSIL	low-grade squamous intraepithelial lesion
INCS	intranasal corticosteroids	LSS	lumbar spinal canal stenosis
INR	international normalised ratio	LUQ	left upper quadrant
IOC	International Olympic Committee	LUT	lower urinary tract
IOFB	intraocular foreign body	LUTS	lower urinary tract symptoms
IP	interphalangeal	LV	left ventricular
IPPV	intermittent positive pressure variation	LVH	left ventricular hypertrophy
IR	internal rotation or immediate release		
ITP	idiopathic (or immune) thrombocytopenia purpura	MAIS	<i>Mycobacterium avium intracellulare</i> or <i>M. sacrofulaceum</i>
IUCD	intrauterine contraceptive device	mane	in morning
IUGR	intrauterine growth retardation	MAOI	monoamine oxidase inhibitor
IV	intravenous	MAST	medical anti-shock trousers
		MB	myocardial base
		mcg	micrograms (also µg)

MCL	medial collateral ligament	NTT	nuchal translucency test
MCP	metacarpal phalangeal	NVDPAA	National Vascular Disease Prevention Alliance
MCU	microscopy and culture of urine		
MCV	mean corpuscular volume		
MDI	metered dose inhaler	(o)	taken orally
MDMA	methylenedioxymethamphetamine	OA	osteoarthritis
MDR	multi-drug resistant TB	OCB	oral contraceptive pill
MG	myaesthesia gravis	OGTT	oral glucose tolerance test
MHT	menopause hormone therapy	OSA	obstructive sleep apnoea
MI	myocardial infarction	OSD	Osgood–Schlatter disorder
MIC	mitral incompetence	OT	occupational therapist
MID	minor intervertebral derangement	OTC	over the counter
MMSE	mini mental state examination		
MND	motor neurone disease	PA	posterior–anterior
MRCP	magnetic resonance cholangiopancreatography	PAD	peripheral arterial disease
		PAN	polyarteritis nodosa
MRI	magnetic resonance imaging	Pap	Papanicolaou
MRSA	methicillin-resistant <i>staphylococcus aureus</i>	PBG	porphobilinogen
		PBS	Pharmaceutical Benefits Scheme
MS	multiple sclerosis	pc	after meals
MSM	men who have sex with men	PCA	percutaneous continuous analgesia
MSST	maternal serum screening test	PCB	post coital bleeding
MSU	midstream urine	PCI	percutaneous coronary intervention
MTP	metatarsophalangeal	PCL	posterior cruciate ligament
MVA	motor vehicle accident	PCOS	polycystic ovarian syndrome
		PCP	pneumocystitis pneumonia
N	normal	PCR	polymerase chain reaction
N saline	normal saline	PCV	packed cell volume
NAAT	nucleic acid amplification technology	PD	Parkinson disease
NAD	no abnormality detected	PDA	patent ductus arteriosus
NCDs	non-communicable diseases	PDD	pervasive development disorders
NET	norethisterone	PEF	peak expiratory flow
NF	neurofibromatosis	PEFR	peak expiratory flow rate
NGU	non-gonococcal urethritis	PET	pre-eclamptic toxemia
NHL	non-Hodgkin lymphoma	PET	positron emission tomography
NH&MRC	National Health and Medical Research Council	PFO	patent foramen ovale
		PFT	pulmonary function test
NIDDM	non-insulin dependent diabetes mellitus	PGL	persistent generalised lymphadenopathy
NNT	numbers needed to treat		
nocte	at night	PH	past history
NR	normal range	PHR	personal health record
NRT	nicotine replacement therapy	PID	pelvic inflammatory disease
NSAIDs	non-steroidal anti-inflammatory drugs	PIP	proximal interphalangeal
NSCLC	non-small cell lung cancer	PJP	pneumocystis jirovecii pneumonia
NSTEACS	non-ST segment elevation acute coronary syndrome	PKU	phenylketonuria
NSU	non-specific urethritis	PLISSIT	permission: limited information: specific suggestion: intensive therapy

PLMs	periodic limb movements	RRR	relative risk reduction
PMDD	premenstrual dysphoric disorder	RSD	reflex sympathetic dystrophy
PMS	premenstrual syndrome	RSI	repetition strain injury
PMT	premenstrual tension	RSV	respiratory syncytial virus
PaO ₂	partial pressure oxygen (arterial blood)	RT	reverse transcriptase
POP	plaster of Paris	rtPA	recombinant tissue plasminogen activator
POP	progestogen-only pill		
PPI	proton-pump inhibitor	RUQ	right upper quadrant
PPROM	preterm premature rupture of membranes		
		s	serum
PR	per rectum	SABA	short-acting beta agonist
prn	as and when needed	SAH	subarachnoid haemorrhage
PRNG	penicillin-resistant gonococci	SARS	severe acute respiratory distress syndrome
PROM	premature rupture of membranes		
PSA	prostate specific antigen	SBE	subacute bacterial endocarditis
PSGN	post streptococcal glomerulonephritis	SBO	small bowel obstruction
PSIS	posterior superior iliac spine	SBP	systolic blood pressure
PSVT	paroxysmal supraventricular tachycardia	SC/SCI	subcutaneous/subcutaneous injection
PT	prothrombin time	SCC	squamous cell carcinoma
PTC	percutaneous transhepatic cholangiography	SCFE	slipped capital femoral epiphysis
		SCG	sodium cromoglycate
PTCA	percutaneous transluminal coronary angioplasty	SCLC	small cell lung cancer
		SERM	selective estrogen receptor modulator
PTFL	posterior talofibular ligament	SIADH	syndrome of secretion of inappropriate antidiuretic hormone
PU	peptic ulcer		
PUO	pyrexia of undetermined origin	SIDS	sudden infant death syndrome
PUVA	psoralen + UVA	SIJ	sacroiliac joint
pv	per vagina	SL	sublingual
PVC	polyvinyl chloride	SLD	specific learning disability
PVD	peripheral vascular disease	SLE	systemic lupus erythematosus
		SLR	straight leg raising
qds, qid	four times daily	SND	sensorineural deafness
		SNHL	sensorineural hearing loss
RA	rheumatoid arthritis	SNPs	single nucleotide polymorphisms
RACGP	Royal Australian College of General Practitioners	SNRI	serotonin noradrenaline reuptake inhibitor
		SOB	shortness of breath
RAP	recurrent abdominal pain	SLS	salt-losing state
RBBB	right branch bundle block	sp	species
RBC	red blood cell	SPA	suprapubic aspirate of urine
RCT	randomised controlled trial	SPECT	single photon emission computerised tomography
RF	rheumatic fever		
Rh	rhesus	SPF	sun penetration factor
RIB	rest in bed	SR	sustained release
RICE	rest, ice, compression, elevation	SSRI	selective serotonin reuptake inhibitor
RIF	right iliac fossa	SSS	sick sinus syndrome
RPR	rapid plasma reagin		
RR	relative risk		

statim	at once
STEMI	ST segment elevation myocardial infarction
STI	sexually transmitted infection
STS	sodium tetradecyl sulfate
SUFE	slipped upper femoral epiphysis
SVC	superior vena cava
SVT	supraventricular tachycardia
<hr/>	
T ₃	tri-iodothyronine
T ₄	thyroxine
TA	temporal arteritis
TB	tuberculosis
TCA	tricyclic antidepressant
tds, tid	three times daily
TENS	transcutaneous electrical nerve stimulation
TFTs	thyroid function tests
TG	triglyceride
TIA	transient ischaemic attack
TIBC	total iron binding capacity
TM	tympanic membrane
TMJ	temporomandibular joint
TNF	tissue necrosis factor
TOE	transoesophageal echocardiography
TOF	tracheo-oesophageal fistula
TORCH	toxoplasmosis, rubella, cytomegalovirus, herpes virus
TPHA	Treponema pallidum haemagglutination test
TSE	testicular self-examination
TSH	thyroid-stimulating hormone
TT	thrombin time
TUE	therapeutic use exemption
TUIP	transurethral incision of prostate
TURP	transurethral resection of prostate
TV	tidal volume

U	units
UC	ulcerative colitis
U & E	urea and electrolytes
UGIB	upper gastrointestinal bleeding
µg	microgram
UMN	upper motor neurone
URT	upper respiratory tract
URTI	upper respiratory tract infection
US	ultrasound
UTI	urinary tract infection
U	ultraviolet
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VAD	voluntary assisted dying
VAS	visual analogue scale
VBI	vertebrobasilar insufficiency
VC	vital capacity
VDRL	Venereal Disease Reference Laboratory
VF	ventricular fibrillation
VMA	vanillylmandelic acid
VPG	venous plasma glucose
VRE	vancomycin-resistant enterococci
VSD	ventricular septal defect
VT	ventricular tachycardia
VUR	vesicoureteric reflux
VVS	vulvar vestibular syndrome
vWD	von Willebrand disease
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WBC	white blood cells
WBR	white → blue → red
WCC	white cell count
WHO	World Health Organization
WPW	Wolff–Parkinson–White
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XL	sex linked

Hoarseness results from imperfect phonation due to impairment of normal vocal cord mobility or vibration. It is an important symptom as it may signal a serious cause such as malignancy or a disease with potential for airway obstruction.¹

RAYMOND L CARROLL 1996

Hoarseness (dysphonia) is defined as an altered voice due to a laryngeal disorder.² It is an important symptom of laryngeal disease presenting in general practice, and ranges from the very common, trivial, self-limiting condition of viral upper respiratory tract infection to a life-threatening disorder (see TABLE 46.1). It may be of sudden presentation lasting only a few days or develop gradually and persist for weeks or months. The cut-off point between acute and chronic hoarseness is three weeks' duration, by which time most self-limiting conditions have resolved. Hoarseness pertains to harsh, raspy, gravelly or rough tones of voice rather than pitch or volume. Rarely, hoarseness can be a functional or deliberate symptom referred to as 'hysterical aphonia'.³ In this condition, people purposely hold the cords apart while speaking.

Table 46.1	Hoarseness: diagnostic strategy model
Probability diagnosis	
Viral URTI: acute laryngitis	
Non-specific irritative laryngitis (Reinke oedema)	
Vocal abuse (shouting, screaming, etc.)	
Nodules and polyps of cords	
Presbyphonia in elderly: 'tired' voice	
Acute tonsillitis	
Serious disorders not to be missed	
Cancer: larynx, lung, including recurrent laryngeal nerve palsy, oesophagus, thyroid	
Imminent airway obstruction (e.g. acute epiglottitis, croup)	
Other rare severe infections (e.g. TB, diphtheria)	
Foreign body	
Motor neurone disease	
Aortic arch aneurysm	
Myasthenia gravis	
Pitfalls (often missed)	
Toxic fumes	
Vocal abuse	

- Benign tumours of vocal cords (e.g. polyps, 'singer's nodules', papillomas)
- Gastro-oesophageal reflux → pharyngolaryngitis
- Goitre
- Vocal cord palsy
- Dystonia
- Physical trauma (e.g. post-intubation), haematoma
- Fungal oropharyngeal infections (e.g. *Candida* with steroid inhalation, immunocompromised)
- Allergy (e.g. angioedema)
- Leukoplakia
- Vocal cord dysfunction
- 'Floppy trachea' syndrome
- Systemic autoimmune disorders (e.g. SLE, Wegener granulomatosis, myaesthesia gravis)

Seven masquerades checklist

- Drugs:
- antipsychotics
 - anabolic steroids
 - opium users
- Smoking → non-specific laryngitis
- Steroids → steroid inhaler laryngitis
- Hypothyroidism, acromegaly

Is the patient trying to tell me something?

- Functional aphonia
- Functional stridor

Key facts and checkpoints

- In acute hoarseness, the diagnosis is usually obvious from the history alone. Examples include acute upper respiratory tract infection (URTI), vocal overuse or regular steroid inhalation.
- Think 'hypothyroidism' if unusual hoarseness develops.
- Laryngeal cancer must be excluded if hoarseness persists for longer than 3 weeks in an adult. It can arise intrinsic or extrinsic to the vocal cords.

- Intermittent hoarseness is invariably secondary to a benign disorder. Constant or progressive hoarseness suggests malignancy.
- Non-malignant vocal cord lesions, which include polyps, vocal nodules, contact ulcers, granulomas, other benign tumours and leukoplakia, account for about half of all chronic voice disorders.
- In cases of chronic hoarseness the larynx must be visualised for diagnosis but the following are common:
 - children—‘screamer’s nodules’
 - adults—non-specific irritant laryngitis
- Acute laryngeal oedema may develop as a component of the life-threatening acute angioedemic allergic response.
- Elderly or debilitated patients may exhibit a shaky or soft ‘pseudohoarse’ voice due to a weakened respiratory effort. This is termed phonaesthesia or presbyphonia.
- Contact ulcers of the larynx occur on the posterior third of the vocal cords where the mucosa is thin. The resultant weak hoarse voice may be accompanied by painful phonation. The ulcers may develop into granulomas. Apart from intubation, the condition is usually found in forceful orators who misuse their larynx when attempting to lower the pitch of their voice.³

- raspy—laryngopharyngeal reflux
- deep—hypothyroidism, Reinke oedema
- gravelly—vocal cord mass/nodule
- soft—Parkinson disease, vocal cord paralysis
- intermittent—functional dysphonia, vocal cord dysfunction
- strained—muscle tension dysphonia

Investigations

The following need to be considered:

- Thyroid function tests.
- Chest X-ray if it is possibly due to lung cancer with recurrent laryngeal nerve palsy.
- Indirect laryngoscopy (the gag reflex may preclude this).
- Direct laryngoscopy with a flexible fibre-optic endoscope with possible biopsy (the most sensitive investigation).
- The choice of imaging to detect suspected neoplasia or laryngeal trauma is a CT scan.

Red flags

- History of significant smoking
- Dysphagia/odynophagia/otalgia
- Neck mass
- Haemoptysis
- Stridor
- Constitutional, e.g. weight loss, fever

The clinical approach

History

Note the nature and duration of the voice change. Inquire about corticosteroid inhalations, excessive or unaccustomed voice straining (especially singing), recent surgery, possible reflux, smoking or exposure to environmental pollutants. Elicit associated respiratory or general symptoms such as cough and weight loss. Consider symptoms of hypothyroidism or Parkinson disease.

Examination

Palpate the neck for enlargement of the thyroid gland or cervical nodes. Perform a simple oropharyngeal examination except if epiglottitis is suspected. Check for signs of hypothyroidism, such as coarse dry hair and skin, slow pulse and mental slowing. With chest examination listen for stridor. Perform indirect laryngoscopy if skilled in the procedure. Note voice characteristics e.g.:⁴

Management principles

Acute hoarseness

- Treat according to cause.
- Advise vocal rest or minimal usage at normal conversational level.
- Avoid irritants (e.g. dust, tobacco, alcohol).
- Consider inhalations and cough suppressants in cases of acute URTI and coughing paroxysms.

Chronic hoarseness

- Establish the diagnosis.
- Consider referral to ENT specialist.

Hoarseness in children

- It is worth bearing in mind that stridor in infants can be caused by a congenital abnormality of the larynx, including laryngomalacia (congenital laryngeal stridor), which is particularly noticeable

when the child is asleep; laryngeal stenosis (congenital laryngeal narrowing); and laryngeal paralysis due to birth trauma of the vagus nerve. Vocal cord paralysis/palsy is the most common laryngeal abnormality in children (20% of cases) after laryngomalacia.³

- In children exclude the acute infections—laryngotracheobronchitis (croup), tonsillitis and epiglottitis.
- Persistent hoarseness in kinder/primary school-aged children is due commonly to vocal cord nodules related to vocal abuse, such as screaming and yelling, often due to noisy children's games.
- It is important to exclude a juvenile papilloma in a hoarse child.⁵

Specific conditions

§ Acute laryngitis

Most cases are caused by the respiratory viruses—rhinovirus, influenza, para-influenza, Coxsackie, adenovirus and respiratory syncytial virus—resulting in vocal cord oedema. Hoarseness is a useful feature to distinguish viral from bacterial upper respiratory infections, although don't discount group A *Streptococcus*. Short-term vocal abuse is also a factor. The main symptom is hoarseness, which usually persists for 3–14 days and leads to loss of voice. It is often self-limiting. Even speaking can be painful. Aggravating factors include smoking, excessive alcohol drinking and exposure to irritants and pollutants, air-conditioning systems and very cold weather.

Management

- Rest at home, including voice rest (the best treatment).
- Use the voice sparingly, avoid whispering.
- Use a warm sialagogue (e.g. hot lemon drinks).
- Drink ample fluids, especially water.
- Avoid smoking, passive smoke and alcohol.
- Have hot, steamy showers as humidity helps.
- Use steam inhalations (e.g. 5 minutes, 3 times a day).
- Use cough suppressants, especially mucolytic agents.
- Use simple analgesics, such as paracetamol or aspirin, for discomfort.
- Antibiotics are of no use unless there is evidence of bacterial infection (unusual). Corticosteroids are rarely indicated.

§ Chronic laryngitis: 'barmaid syndrome'

This typically occurs in a heavy smoker who works in a heavy smoking environment, who is a heavy drinker and continually talks or sings. It is a combination of vocal abuse and chemical irritation. Hoarseness often comes and goes. Treatment involves modification of these factors and screening for vocal cord tumours.

§ Benign tumours of the vocal cords

These include nodules (most common) (see FIG. 46.1), polyps (second most common), cysts and papules. Vocal cord nodules, including 'singer's nodules', may respond well to conservative measures such as voice rest and vocal therapy. If not, they can be removed by microlaryngeal surgery or laser therapy. Dependent polyps and papillomas are removed by microsurgery.

Pharyngolaryngitis

Also termed laryngopharyngitis, it presents with a raspy voice, chronic throat clearing and GORD, e.g. heartburn. If due to laryngopharyngeal reflux, treat with an 8–12 week empirical course of proton-pump inhibitors as well as dietary and lifestyle modification.² It tends to be overdiagnosed, but should be referred to an otorhinolaryngologist if symptoms are persistent.⁴

Steroid inhaler induced laryngitis⁴

This common problem should be evident and readily treatable. Examine for oral thrush and, if present, treat

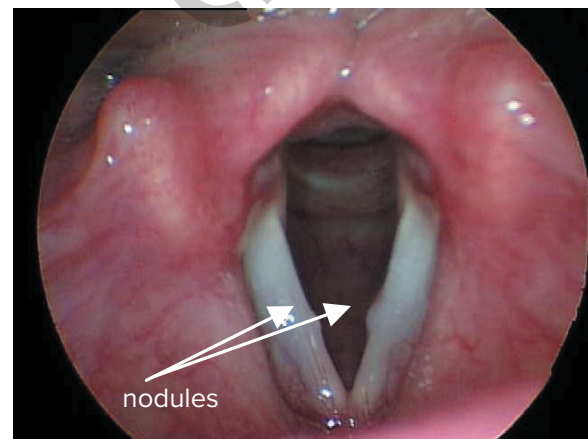


FIGURE 46.1 Vocal cord nodules

with antifungal medication. Check inhaler/spacer technique and advise rinsing and gargling after use.

§ Laryngeal cancer

Squamous cell carcinoma usually occurs in people with a history of chronic laryngitis, smoking and alcohol use. Symptoms include hoarseness, stridor, haemoptysis and dysphagia. It may be preceded by leukoplakia, which is treated by vocal cord stripping under microsurgery. The diagnosis based on persistent hoarseness is made after fibre-optic laryngoscopy and biopsy by a specialist. The patient may present with an unexplained cervical lymph node. The condition is curable if detected early. Small local tumours can be treated by radiotherapy or laser therapy. Larger tumours usually require laryngectomy and perhaps dissection of the cervical lymph nodes (commando operation). Such radical surgery demands considerable patient support, including education about speech, eating and tracheostomy care.

§ Vocal cord dysfunction⁶

This condition is paradoxical vocal (or fold) adduction on inspiration and abduction on expiration, causing inspiratory airway obstruction and stridor. It tends to be misdiagnosed as asthma. Apart from dyspnoea, wheezing and stridor (usually inspiratory) symptoms may include intermittent hoarseness, chest and/or throat tightness, a noisy rasping sound and a choking or suffocating sensation. Patients may complain about a feeling 'like breathing through a straw'. Diagnosis is by observing inspiratory closure of the vocal cords with direct laryngoscopy. The mainstay of treatment is speech therapy.

§ Excessive dynamic airways collapse ('floppy trachea')⁷

Also known as adult tracheobronchomalacia, this is defined as pathological collapse and narrowing of the airway lumen by $\geq 50\%$. It is due to laxity of the posterior membrane into the airway lumen (in the presence of structurally intact cartilage) during forced expiration. Symptoms include breathing difficulty, coughing, difficulty clearing secretions, dyspnoea and stridor.

Respiratory failure and death can occur. Diagnosis is with CT scanning and fibre-optic bronchoscopy. Treatment varies from conservative to surgery (minimal to radical). Refer to a respiratory physician.

When to refer¹

- Acute cases that are unexplained, fail to respond by 3–4 weeks or recur; people >45 years.
- All chronic cases.
- Any case with stridor or non-tender cervical lymphadenopathy.
- Chronic hoarseness secondary to vocal abuse—refer for voice therapy.

Practice tips

- Consider intubation as a possible cause of transient hoarseness.
- Consider gastro-oesophageal reflux disease in the elderly but avoid such a diagnosis without specialist investigation for other causes.
- If stridor is present with acute hoarseness, the airway is compromised. Be on stand-by for possible emergency intervention.
- Prevention is the best treatment for laryngeal cancer (i.e. quit smoking).
- Recurrent laryngeal nerve palsy may be associated with cancer of the lung and mediastinum, or diabetes, or may be idiopathic.

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