September 2014 – March 2015

# BNF 68

The authority on the selection and use of medicines

bnf.org

# British National Formulary

# BNF 68



## September 2014 – March 2015

BMA

ROYAL PHARMACEUTICAL SOCIETY

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The BNF is also available on www.evidence.nhs.uk and the NICE BNF smartphone app can be downloaded with a NHS Athens password in England, Scotland, and Wales; for technical support, email:
contactus@evidence.nhs.uk.

**Distribution of printed BNFs**
In **England**, NICE purchases print editions of the BNF (September editions only) for distribution within the NHS. For details of who is eligible to receive a copy and further contact details, please refer to the NICE website:
www.nice.org.uk/mpc/BritishNationalFormulary.jsp.

In **Scotland**, email:
nss.psd-bnf@nhs.net

In **Wales**, contact NHS Wales Shared Services Partnership—Contractor Services:
Tel: 01792 607420

In **Northern Ireland**, email:
ni.bnf@hscni.net

The BNF is designed as a digest for rapid reference and it may not always include all the information necessary for prescribing and dispensing. Also, less detail is given on areas such as obstetrics, malignant disease, and anaesthesia since it is expected that those undertaking treatment will have specialist knowledge and access to specialist literature. *BNF for Children* should be consulted for detailed information on the use of medicines in children. The BNF should be interpreted in the light of professional knowledge and supplemented as necessary by specialised publications and by reference to the product literature. Information is also available from medicines information services (see inside front cover).

Pharmaid

Numerous requests have been received from developing countries for BNFs. The Pharmaid scheme of the Commonwealth Pharmacists Association will dispatch old BNFs to Commonwealth countries. BNFs will be collected from certain community pharmacies in November. For further details check the health press or email:
admin@commonwealthpharmacy.org

## Medicines information services

Information on any aspect of drug therapy can be obtained from Regional and District Medicines Information Services. Details regarding the *local* services provided within your Region can be obtained by telephoning the following numbers.

| | |
|---|---|
| **England** | |
| Birmingham | (0121) 424 7298 |
| Bristol | (0117) 342 2867 |
| Ipswich | (01473) 704 431 |
| Leeds | (0113) 206 5377 |
| Leicester | (0116) 255 5779/258 6491 |
| Liverpool | (0151) 794 8113/4/5/7<br>(0151) 794 8206 |
| London | |
| Guy's Hospital | (020) 7188 8750<br>(020) 7188 3849<br>(020) 7188 3855 |
| Northwick Park Hospital | (020) 8869 2761<br>(020) 8869 3973 |
| Newcastle | (0191) 282 4631 |
| Southampton | (023) 8120 6908/9 |
| **Wales** | |
| Cardiff | (029) 2074 2979<br>(029) 2074 2251 |
| **Scotland** | |
| Aberdeen | (01224) 552 316 |
| Dundee | (01382) 632 351<br>(01382) 660 111 Extn 32351 |
| Edinburgh | (0131) 242 2920 |
| Glasgow | (0141) 211 4407 |
| **Northern Ireland** | |
| Belfast | (028) 9063 2032<br>(028) 9063 3847 |
| **Republic of Ireland** | |
| Dublin | Dublin 473 0589<br>Dublin 453 7941 Extn 2348 |

**United Kingdom Medicines Information Pharmacists Group (UKMIPG) website**

www.ukmi.nhs.uk

Telephone numbers and email addresses of manufacturers listed in BNF Publications are shown in the Index of Manufacturers

**UK Teratology Information Service**

Information on drug and chemical exposures in pregnancy

Tel: 0844 892 0909

Information on drug therapy relating to **dental treatment** can be obtained by telephoning

| | |
|---|---|
| Liverpool | (0151) 794 8206 |

**Driver and Vehicle Licensing Agency (DVLA)**

Information on the national medical guidelines of fitness to drive is available from:

www.gov.uk/government/publications/at-a-glance

**Patient Information Lines**

| | |
|---|---|
| NHS Direct | 0845 4647 |

**Poisons Information Services**

| | |
|---|---|
| UK National Poisons Information Service | 0844 892 0111 |

**Sport**

Information on substances currently permitted or prohibited is provided in a card supplied by UK Anti-doping.

Further information regarding medicines in sport is available from: www.ukad.org.uk

Tel: (020) 7766 7350

information@ukad.org.uk

**Travel Immunisation**

Up-to-date information on travel immunisation requirements may be obtained from:

National Travel Health Network and Centre (for healthcare professionals only) 0845 602 6712 (09.00–12.00 and 14.00–16.30 hours weekdays)

Travel Medicine Team, Health Protection Scotland (0141) 300 1130 (14.00–16.00 hours weekdays)

www.travax.nhs.uk (for registered users of the NHS website Travax only)

Welsh Assembly Government (029) 2082 1318 (09.00–17.30 hours weekdays)

Department of Health and Social Services (Belfast) (028) 9052 2118 (weekdays)

**List of Registered Medical Practitioners**

Details on whether doctors are registered and hold a licence to practise medicine in the UK can be obtained from the General Medical Council.

Tel: (0161) 923 6602

www.gmc-uk.org/register

DC 22/08

# Access the BNF *your* way

**The *British National Formulary* (BNF) and *BNF for Children* are updated monthly online via MedicinesComplete, ensuring healthcare professionals always have the latest prescribing advice.**

**You can be alerted to all the latest updates by signing up to the BNF eNewsletter at www.bnf.org/newsletter.**

## ONLINE

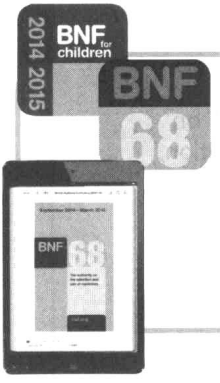
MedicinesComplete

**BNF on MedicinesComplete**
Access BNF and *BNF for Children* on MedicinesComplete and receive the very latest drug information through monthly online updates.

BNF on FormularyComplete

**BNF on FormularyComplete**
Create, edit and manage your own local formulary content built upon the trusted prescribing advice of the BNF and *BNF for Children*.

**BNF on Evidence Search**
Search the BNF and *BNF for Children* alongside other authoritative clinical and non-clinical evidence and best practice at http://evidence.nhs.uk from NICE.




## MOBILE

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**BNF PDA version** – Full content of the BNF is available for use via a PDA.

**BNF eBook** – Available to download on the iBookstore.

## PRINT


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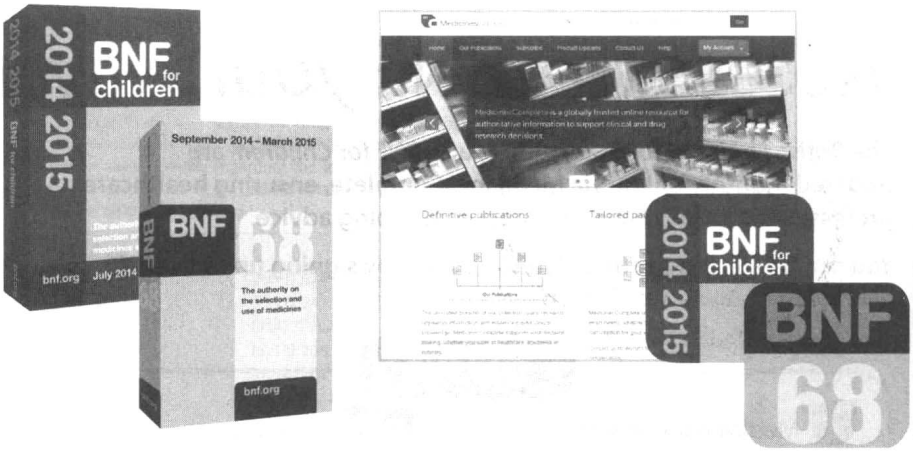


If you are entitled to a free NHS copy of BNF, the print version is now distributed by NICE annually in September. See page ii for full details on distribution, or tel: 01268 495 609 / email: **bnf@binleys.com**.

## How to purchase

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For enquiries about the BNF or BNFC in print, contact **direct@macmillan.co.uk**
Tel: **+44 (0) 1256 302 699**

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Tel: **+44 (0) 20 7572 2266**

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BNF

BNF for children

# Preface

The BNF is a joint publication of the British Medical Association and the Royal Pharmaceutical Society. It is published under the authority of a Joint Formulary Committee which comprises representatives of the two professional bodies, the UK Health Departments, the Medicines and Healthcare products Regulatory Agency, and a national guideline producer. The Dental Advisory Group oversees the preparation of advice on the drug management of dental and oral conditions; the Group includes representatives of the British Dental Association and a representative from the UK Health Departments. The Nurse Prescribers' Advisory Group advises on the content relevant to nurses and includes representatives from different parts of the nursing community and from the UK Health Departments.

The BNF aims to provide prescribers, pharmacists, and other healthcare professionals with sound up-to-date information about the use of medicines.

The BNF includes key information on the selection, prescribing, dispensing and administration of medicines. Medicines generally prescribed in the UK are covered and those considered less suitable for prescribing are clearly identified. Little or no information is included on medicines promoted for purchase by the public.

Information on drugs is drawn from the manufacturers' product literature, medical and pharmaceutical literature, UK health departments, regulatory authorities, and professional bodies. Advice is constructed from clinical literature and reflects, as far as possible, an evaluation of the evidence from diverse sources. The BNF also takes account of authoritative national guidelines and emerging safety concerns. In addition, the editorial team receives advice on all therapeutic areas from expert clinicians; this ensures that the BNF's recommendations are relevant to practice.

The BNF is designed as a digest for rapid reference and it may not always include all the information necessary for prescribing and dispensing. Also, less detail is given on areas such as obstetrics, malignant disease, and anaesthesia since it is expected that those undertaking treatment will have specialist knowledge and access to specialist literature. *BNF for Children* should be consulted for detailed information on the use of medicines in children. The BNF should be interpreted in the light of professional knowledge and supplemented as necessary by specialised publications and by reference to the product literature. Information is also available from medicines information services (see inside front cover).

It is **important** to use the most recent BNF information for making clinical decisions. The print edition of the BNF is updated in March and September each year. Monthly updates are provided online via the BNF Publications website bnf.org, MedicinesComplete, and the NHS Evidence portal. The more important changes for this edition are listed on p. xvii; changes listed online are cumulative (from one print edition to the next), and can be printed off each month to show the main changes since the last print edition as an aide memoire for those using print copies.

The website (bnf.org) includes additional information of relevance to healthcare professionals. Other digital formats of the BNF—including versions for mobile devices and integration into local formularies—are also available.

The BNF welcomes comments from healthcare professionals. Comments and constructive criticism should be sent to:
British National Formulary,
Royal Pharmaceutical Society,
1 Lambeth High Street, London SE1 7JN.
editor@bnf.org

The contact email for manufacturers or pharmaceutical companies wishing to contact BNF Publications is manufacturerinfo@bnf.org

# General information and changes

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Advice on dental practice
The **British Dental Association** has contributed to the advice on medicines for dental practice through its representatives on the Dental Advisory Group.

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# How the BNF is constructed

The BNF is unique in bringing together authoritative, independent guidance on best practice with clinically validated drug information, enabling healthcare professionals to select safe and effective medicines for individual patients.

Information in the BNF has been validated against emerging evidence, best-practice guidelines, and advice from a network of clinical experts.

Hundreds of changes are made between print editions, and are published monthly online. The most clinically significant changes are listed at the front of each edition (p. xvii).

## Joint Formulary Committee

The Joint Formulary Committee (JFC) is responsible for the content of the BNF. The JFC includes doctors appointed by the BMJ Group, pharmacists appointed by the Royal Pharmaceutical Society, and representatives from the Medicines and Healthcare products Regulatory Agency (MHRA), the UK Health Departments, and a national guideline producer. The JFC decides on matters of policy and reviews amendments to the BNF in the light of new evidence and expert advice.

## Dental Advisory Group

The Dental Advisory Group oversees the preparation of advice on the drug management of dental and oral conditions; the group includes representatives from the British Dental Association and a representative from the UK Health Departments.

## Editorial team

BNF clinical writers have all worked as pharmacists and have a sound understanding of how drugs are used in clinical practice. Each clinical writer is responsible for editing, maintaining, and updating specific chapters of the BNF. During the publication cycle the clinical writers review information in the BNF against a variety of sources (see below).

Amendments to the text are drafted when the clinical writers are satisfied that any new information is reliable and relevant. The draft amendments are passed to expert advisers for comment and then presented to the Joint Formulary Committee for consideration. Additionally, sections are regularly chosen from every chapter for thorough review. These planned reviews aim to verify all the information in the selected sections and to draft any amendments to reflect the current best practice.

Clinical writers prepare the text for publication and undertake a number of checks on the knowledge at various stages of the production.

## Expert advisers

The BNF uses about 60 expert clinical advisers (including doctors, pharmacists, nurses, and dentists) throughout the UK to help with the clinical content. The role of these expert advisers is to review existing text and to comment on amendments drafted by the clinical writers. These clinical experts help to ensure that the BNF remains reliable by:

- commenting on the relevance of the text in the context of best clinical practice in the UK;
- checking draft amendments for appropriate interpretation of any new evidence;
- providing expert opinion in areas of controversy or when reliable evidence is lacking;
- advising on areas where the BNF diverges from summaries of product characteristics;
- providing independent advice on drug interactions, prescribing in hepatic impairment, renal impairment, pregnancy, breast-feeding, children, the elderly, palliative care, and the emergency treatment of poisoning.

In addition to consulting with regular advisers, the BNF calls on other clinical specialists for specific developments when particular expertise is required.

The BNF also works closely with a number of expert bodies that produce clinical guidelines. Drafts or pre-publication copies of guidelines are routinely received for comment and for assimilation into the BNF.

## Sources of BNF information

The BNF uses a variety of sources for its information; the main ones are shown below.

**Summaries of product characteristics** The BNF receives summaries of product characteristics (SPCs) of all new products as well as revised SPCs for existing products. The SPCs are the principal source of product information and are carefully processed, despite the ever-increasing volume of information being issued by the pharmaceutical industry. Such processing involves:

- verifying the approved names of all relevant ingredients including 'non-active' ingredients (the BNF is committed to using approved names and descriptions as laid down by the Human Medicines Regulations 2012);
- comparing the indications, cautions, contra-indications, and side-effects with similar existing drugs. Where these are different from the expected pattern, justification is sought for their inclusion or exclusion;
- seeking independent data on the use of drugs in pregnancy and breast-feeding;
- incorporating the information into the BNF using established criteria for the presentation and inclusion of the data;
- checking interpretation of the information by a second clinical writer before submitting to a lead editor; changes relating to doses receive an extra check;
- identifying potential clinical problems or omissions and seeking further information from manufacturers or from expert advisers;
- careful validation of any areas of divergence of the BNF from the SPC before discussion by the Committee (in the light of supporting evidence);

- constructing, with the help of expert advisers, a comment on the role of the drug in the context of similar drugs.

Much of this processing is applicable to the following sources as well.

**Expert advisers** The role of expert clinical advisers in providing the appropriate clinical context for all BNF information is discussed above.

**Literature** Clinical writers monitor core medical and pharmaceutical journals. Research papers and reviews relating to drug therapy are carefully processed. When a difference between the advice in the BNF and the paper is noted, the new information is assessed for reliability and relevance to UK clinical practice. If necessary, new text is drafted and discussed with expert advisers and the Joint Formulary Committee. The BNF enjoys a close working relationship with a number of national information providers.

**Systematic reviews** The BNF has access to various databases of systematic reviews (including the Cochrane Library and various web-based resources). These are used for answering specific queries, for reviewing existing text, and for constructing new text. Clinical writers receive training in critical appraisal, literature evaluation, and search strategies. Reviews published in Clinical Evidence are used to validate BNF advice.

**Consensus guidelines** The advice in the BNF is checked against consensus guidelines produced by expert bodies. A number of bodies make drafts or pre-publication copies of the guidelines available to the BNF; it is therefore possible to ensure that a consistent message is disseminated. The BNF routinely processes guidelines from the National Institute for Health and Care Excellence (NICE), the Scottish Medicines Consortium (SMC), and the Scottish Intercollegiate Guidelines Network (SIGN).

**Reference sources** Textbooks and reference sources are used to provide background information for the review of existing text or for the construction of new text. The BNF team works closely with the editorial team that produces *Martindale: The Complete Drug Reference*. The BNF has access to *Martindale* information resources and each team keeps the other informed of significant developments and shifts in the trends of drug usage.

**Statutory information** The BNF routinely processes relevant information from various Government bodies including Statutory Instruments and regulations affecting the Prescription only Medicines Order. Official compendia such as the British Pharmacopoeia and its addenda are processed routinely to ensure that the BNF complies with the relevant sections of the Human Medicines Regulations 2012.

The BNF maintains close links with the Home Office (in relation to controlled drug regulations) and the Medicines and Healthcare products Regulatory Agency (including the British Pharmacopoeia Commission). Safety warnings issued by the Commission on Human Medicines (CHM) and guidelines on drug use issued by the UK health departments are processed as a matter of routine.

Relevant professional statements issued by the Royal Pharmaceutical Society are included in the BNF as are guidelines from bodies such as the Royal College of General Practitioners.

The BNF reflects information from the Drug Tariff, the Scottish Drug Tariff, and the Northern Ireland Drug Tariff.

**Pricing information** NHS Prescription Services (from the NHS Business Services Authority) provides information on prices of medicinal products and appliances in the BNF.

**Comments from readers** Readers of the BNF are invited to send in comments. Numerous letters and emails are received by the BNF team. Such feedback helps to ensure that the BNF provides practical and clinically relevant information. Many changes in the presentation and scope of the BNF have resulted from comments sent in by users.

**Comments from industry** Close scrutiny of the BNF by the manufacturers provides an additional check and allows them an opportunity to raise issues about the BNF's presentation of the role of various drugs; this is yet another check on the balance of the BNF's advice. All comments are looked at with care and, where necessary, additional information and expert advice are sought.

**Virtual user groups** The BNF has set up virtual user groups across various healthcare professions (e.g. doctors, pharmacists, nurses, dentists). The aim of these groups will be to provide feedback to the editors and publishers to ensure that BNF publications continue to serve the needs of its users.

**Market research** Market research is conducted at regular intervals to gather feedback on specific areas of development, such as drug interactions or changes to the way information is presented in digital formats.

The BNF is an independent professional publication that is kept up-to-date and addresses the day-to-day prescribing information needs of healthcare professionals. Use of this resource throughout the health service helps to ensure that medicines are used safely, effectively, and appropriately.

# How to use the BNF

In order to achieve the safe, effective, and appropriate use of medicines, healthcare professionals must be able to use the BNF effectively, and keep up to date with significant changes in the BNF that are relevant to their clinical practice. *How to Use the BNF* is aimed as a quick refresher for all healthcare professionals involved with prescribing, monitoring, supplying, and administering medicines, and as a learning aid for students training to join these professions. While *How to Use the BNF* is linked to the main elements of rational prescribing, the generic structure of this section means that it can be adapted for teaching and learning in different clinical settings.

## Structure of the BNF

The Contents list (on p. iv) shows that information in the BNF is divided into:

- *How the BNF is Constructed* (p. ix);
- *Changes* (p. xvii);
- *Guidance on Prescribing* (p. 1), which provides practical information on many aspects of prescribing from writing a prescription to prescribing in palliative care;
- *Emergency Treatment of Poisoning* (p. 33), which provides an overview on the management of acute poisoning;
- *Classified notes on clinical conditions, drugs, and preparations*, these notes are divided into 15 chapters, each of which is related to a particular system of the body (e.g. chapter 2, Cardiovascular System) or to an aspect of medical care (e.g. chapter 5, Infections). Each chapter is further divided into classified sections. Each section usually begins with *prescribing notes* followed by relevant drug *monographs* and *preparations* (see fig. 1). Drugs are classified in a section according to their pharmacology and therapeutic use;
- *Appendices and Indices*, includes 5 Appendices (providing information on drug interactions, Borderline substances, cautionary and advisory labels for dispensed medicines, intravenous additives, and wound management), the Dental Practitioners' Formulary, the Nurse Prescribers' Formulary, Non-medical Prescribing, Index of Manufacturers, and the main Index. The information in the Appendices should be used in conjunction with relevant information in the chapters.

## Finding information in the BNF

The BNF includes a number of aids to help access relevant information:

- *Index*, where entries are included in alphabetical order of non-proprietary drug names, proprietary drug names, clinical conditions, and prescribing topics. A specific entry for 'Dental Prescribing' brings together topics of relevance to dentists. The page reference to the drug monograph is shown in **bold** type. References to drugs in Appendices 1 and 3 are not included in the main Index;
- *Contents* (p. iv), provides a hierarchy of how information in the BNF is organised;
- The beginning of each chapter includes *a classified hierarchy* of how information is organised in that chapter;
- *Running heads*, located next to the page number on the top of each page, show the section of the BNF that is being used;
- *Thumbnails*, on the outer edge of each page, show the chapter of the BNF that is being used;
- *Cross-references*, lead to additional relevant information in other parts of the BNF.

## Finding dental information in the BNF

Extra signposts have been added to help access dental information in the BNF:

- *Prescribing in Dental Practice* (p. 27), includes a contents list dedicated to drugs and topics of relevance to dentists, together with cross-references to the prescribing notes in the appropriate sections of the BNF. For example, a review of this list shows that information on the local treatment of oral infections is located in chapter 12 (Ear, Nose, and Oropharynx) while information on the systemic treatment of these infections is found in chapter 5 (Infections). This section also includes advice on Medical Emergencies in Dental Practice (p. 27) and Medical Problems in Dental Practice (p. 29). Guidance on the prevention of endocarditis and advice on the management of anticoagulated patients undergoing dental surgery can also be found here;
- *Side-headings*, in the prescribing notes, side-headings facilitate the identification of advice on oral conditions (e.g. Dental and Orofacial Pain, p. 274);
- *Dental prescribing on NHS*, in the body of the BNF, preparations that can be prescribed using NHS form FP10D (GP14 in Scotland, WP10D in Wales) can be identified by means of a note headed 'Dental prescribing on NHS' (e.g. Aciclovir Tablets, p. 424).

## Identifying effective drug treatments

The prescribing notes in the BNF provide an overview of the drug management of common conditions and facilitate rapid appraisal of treatment options (e.g. hypertension, p. 108). For ease of use, information on the management of certain conditions has been tabulated (e.g. acute asthma, p. 183). Information is also provided on the prevention of disease (e.g. malaria prophylaxis for travellers, p. 437). Cardiovascular risk prediction charts for the primary prevention of cardiovascular disease can be found in the glossy pages at the back of the BNF.

Advice issued by the National Institute for Health and Clinical Excellence (NICE) is integrated within the BNF prescribing notes if appropriate. Summaries of NICE technology appraisals, and relevant short guidelines, are included in blue panels. The BNF also includes advice issued by the Scottish Medicines Consortium (SMC) when a medicine is restricted or not recommended for use within NHS Scotland.

In order to select safe and effective medicines for individual patients, information in the prescribing notes must be used in conjunction with other prescribing details about the drugs and knowledge of the patient's medical and drug history.

A brief description of the clinical uses of a drug can usually be found in the Indications section of its monograph (e.g. bendroflumethiazide, p. 87); a cross-reference is provided to any indications for that drug that are covered in other sections of the BNF.

The symbol ◢ is used to denote preparations that are considered by the Joint Formulary Committee to be less suitable for prescribing. Although such preparations may not be considered as drugs of first choice, their use may be justifiable in certain circumstances.

## Drug management of medical emergencies

Guidance on the drug management of medical emergencies can be found in the relevant BNF chapters (e.g. treatment of anaphylaxis is included in section 3.4.3); advice on the management of medical emergencies in dental practice can be found in Prescribing in Dental Practice, p. 27. A summary of drug doses used for Medical Emergencies in the Community can be found in the glossy pages at the back of the BNF. An algorithm for Adult Advanced Life Support can also be found within these pages.

## Figure 1 Illustrates the typical layout of a drug monograph and preparation records in the BNF

**DRUG NAME** ◢

**Indications** details of clinical uses

**Cautions** details of precautions required and also any monitoring required

Counselling Verbal explanation to the patient of specific details of the drug treatment (e.g. posture when taking a medicine)

**Contra-indications** circumstances when a drug should be avoided

**Hepatic impairment** advice on the use of a drug in hepatic impairment

**Renal impairment** advice on the use of a drug in renal impairment

**Pregnancy** advice on the use of a drug during pregnancy

**Breast-feeding** advice on the use of a drug during breast-feeding

**Side-effects** very common (greater than 1 in 10) and common (1 in 100 to 1 in 10); *less commonly* (1 in 1000 to 1 in 100); *rarely* (1 in 10 000 to 1 in 1000); *very rarely* (less than 1 in 10 000); also reported, frequency not known

**Dose**

- Dose and frequency of administration (max. dose); CHILD and ELDERLY details of dose for specific age group
- By alternative route, dose and frequency

[1]**Approved Name** (Non-proprietary) PoM

Pharmaceutical form, sugar-free, active ingredient mg/mL, net price, pack size = basic NHS price. Label: (as in Appendix 3)

1. Exceptions to the prescribing status are indicated by a note or footnote.

**Proprietary Name** (Manufacturer) PoM NHS

Pharmaceutical form, colour, coating, active ingredient and amount in dosage form, net price, pack size = basic NHS price. Label: (as in Appendix 3)

Excipients include clinically important excipients

Electrolytes clinically significant quantities of electrolytes

Note Specific notes about the product e.g. handling

### Drugs

Drugs appear under pharmacopoeial or other non-proprietary titles. When there is an *appropriate current monograph* (Human Medicines Regulations 2012) preference is given to a name at the head of that monograph; otherwise a British Approved Name (BAN), if available, is used.

The symbol ◢ is used to denote those preparations that are considered by the Joint Formulary Committee to be less suitable for prescribing. Although such preparations may not be considered as drugs of first choice, their use may be justifiable in certain circumstances.

### Prescription-only medicines PoM

This symbol has been placed against those preparations that are available only on a prescription issued by an appropriate practitioner. For more detailed information see *Medicines, Ethics and Practice*, London, Pharmaceutical Press (always consult latest edition).

The symbols CD2 CD3 CD4-1 CD4-2 indicate that the preparations are subject to the prescription requirements of the Misuse of Drugs Act. For regulations governing prescriptions for such preparations see Controlled Drugs and Drug Dependence.

### Preparations not available for NHS prescription NHS

This symbol has been placed against those preparations included in the BNF that are not prescribable under the NHS. Those prescribable only for specific disorders have a footnote specifying the condition(s) for which the preparation remains available. Some preparations which are not *prescribable* by brand name under the NHS may nevertheless be *dispensed* using the brand name providing that the prescription shows an appropriate non-proprietary name.

### Preparations

Preparations are included under a non-proprietary title, if they are marketed under such a title, if they are not otherwise prescribable under the NHS, or if they may be prepared extemporaneously.

### Prices

Prices have been calculated from the basic cost used in pricing NHS prescriptions, see also Prices in the BNF for details.

## Minimising harm in patients with co-morbidities

The drug chosen to treat a particular condition should have minimal detrimental effects on the patient's other diseases and minimise the patient's susceptibility to adverse effects. To achieve this, the *Cautions*, *Contra-indications*, and *Side-effects* of the relevant drug should be reviewed, and can usually be found in the drug monograph. However, if a class of drugs (e.g. tetracyclines, p. 374) share the same cautions, contra-indications, and side-effects, these are amalgamated in the prescribing notes while those unique to a particular drug in that class are included in its individual drug monograph. Occasionally, the cautions, contra-indications, and side-effects may be included within a preparation record if they are specific to that preparation or if the preparation is not accompanied by a monograph.

The information under Cautions can be used to assess the risks of using a drug in a patient who has co-morbidities that are also included in the Cautions for that drug—if a safer alternative cannot be found, the drug may be prescribed while monitoring the patient for adverse-effects or deterioration in the co-morbidity. Contra-indications are far more restrictive than Cautions and mean that the drug should be avoided in a patient with a condition that is contra-indicated.

The impact that potential side-effects may have on a patient's quality of life should also be assessed. For instance, in a patient who has difficulty sleeping, it may be preferable to avoid a drug that frequently causes insomnia. The prescribing notes in the BNF may highlight important safety concerns and differences between drugs in their ability to cause certain side-effects.

## Prescribing for patients with hepatic or renal impairment

Drug selection should aim to minimise the potential for drug accumulation, adverse drug reactions, and exacerbation of pre-existing hepatic or renal disease. If it is necessary to prescribe drugs whose effect is altered by hepatic or renal disease, appropriate drug dose adjustments should be made, and patients should be monitored adequately. The general principles for prescribing are outlined under *Prescribing in Hepatic Impairment* (p. 17) and *Prescribing in Renal Impairment* (p. 17). Information about drugs that should be avoided or used with caution in hepatic disease or renal impairment can be found in drug monographs under *Hepatic Impairment* and *Renal Impairment* (e.g. fluconazole, p. 404). However, if a class of drugs (e.g. tetracyclines, p. 374) share the same recommendations for use in hepatic disease or renal impairment, this advice is presented in the prescribing notes under *Hepatic Impairment* and *Renal Impairment* and any advice that is unique to a particular drug in that class is included in its individual drug monograph.

## Prescribing for patients who are pregnant or breast-feeding

Drug selection should aim to minimise harm to the fetus, nursing infant, and mother. The infant should be monitored for potential side-effects of drugs used by the mother during pregnancy or breast-feeding. The general principles for prescribing are outlined under *Prescribing in Pregnancy* (p. 19) and *Prescribing in Breast-feeding* (p. 19). The prescribing notes in the BNF chapters provide guidance on the drug treatment of common conditions that can occur during pregnancy and breast-feeding (e.g. asthma, p. 181). Information about the use of specific drugs during pregnancy and breast-feeding can be found in their drug monographs under *Pregnancy* and *Breast-feeding* (e.g. fluconazole, p. 404). However, if a class of drugs (e.g. tetracyclines, p. 374) share the same recommendations for use during pregnancy or breast-feeding, this advice is amalgamated in the prescribing notes under *Pregnancy* and *Breast-feeding* while any advice that is unique to a particular drug in that class is included in its individual drug monograph.

## Minimising drug interactions

Drug selection should aim to minimise drug interactions. If it is necessary to prescribe a potentially serious combination of drugs, patients should be monitored appropriately. The mechanisms underlying drug interactions are explained in Appendix 1 (p. 884).

Details of drug interactions can be found in Appendix 1 of the BNF (p. 885). Drugs and their interactions are listed in alphabetical order of the non-proprietary drug name, and cross-references to drug classes are provided where appropriate. Each drug or drug class is listed twice: in the alphabetical list and also against the drug or class with which it interacts. The symbol • is placed against interactions that are potentially serious and where combined administration of drugs should be avoided (or only undertaken with caution and appropriate monitoring). Interactions that have no symbol do not usually have serious consequences.

If a drug or drug class has interactions, a cross reference to where these can be found in Appendix 1 is provided under the Cautions of the drug monograph or prescribing notes.

## Prescribing for the elderly

General guidance on prescribing for the elderly can be found on p. 25.

## Prescribing for children

General guidance on prescribing for children can be found on p. 15. For detailed advice on medicines used in children, consult *BNF for Children*.

## Selecting the dose

The drug dose is usually located in the *Dose* section of the drug monograph or preparation record. The dose of a drug may vary according to different indications and routes of administration. If no indication is given by the dose, then that dose can be used for the conditions specified in the Indications section of that drug monograph, but not for the conditions cross-referring to other sections of the BNF. The dose is located within the preparation record when the dose varies according to different formulations of that drug (e.g. amphotericin, p. 407) or when a preparation has a dose different to that in its monograph (e.g. *Sporanox*® liquid, p. 405). Occasionally, drug doses may be included in the prescribing notes for practical reasons (e.g. doses of drugs in *Helicobacter pylori* eradication regimens, p. 51). The right dose should be selected for the right indication, route of administration, and preparation.

Doses are either expressed in terms of a definite frequency (e.g. 1 g 4 times daily) or in the total daily dose format (e.g. 6 g daily in 3 divided doses); the total daily dose should be divided into individual doses (in the second example, the patient should receive 2 g 3 times daily).

The doses of some drugs may need to be adjusted if their effects are altered by concomitant use with other drugs, or in patients with hepatic or renal impairment (see Minimising Drug Interactions, and Prescribing for Patients with Hepatic or Renal Impairment).

Doses for specific patient groups (e.g. the elderly) may be included if they are different to the standard dose. Doses for children can be identified by the terms NEONATE, INFANT, and CHILD, and will vary according to their age or body-weight.

Conversions for imperial to metric measures can be found in the glossy pages at the back of the BNF.

## Selecting a suitable preparation

Patients should be prescribed a preparation that complements their daily routine, and that provides the right dose of drug for the right indication and route of administration.

In the BNF, preparations usually follow immediately after the monograph for the drug which is their main ingredient. The preparation record (see fig. 1) provides information on the type of formulation (e.g. tablet), the amount of active drug in a solid dosage form, and the concentration of active drug in a liquid dosage form. The legal status is shown for prescription only medicines and controlled drugs; any exception to the legal status is shown by a Note immediately after the preparation record or a footnote. If a proprietary preparation has a distinct colour, coating, scoring, or flavour, this is shown in the preparation record. If a proprietary preparation includes excipients usually specified in the BNF (see p. 2), these are shown in the *Excipients* statement, and if it contains clinically significant quantities of electrolytes, these are usually shown in the *Electrolytes* statement.

Branded oral liquid preparations that do not contain fructose, glucose, or sucrose are described as 'sugar-free' in the BNF. Preparations containing hydrogenated glucose syrup, mannitol, maltitol, sorbitol, or xylitol are also marked 'sugar-free' since there is evidence that they do not cause dental caries. Patients receiving medicines containing cariogenic sugars should be advised of appropriate dental hygiene measures to prevent caries. Sugar-free preparations should be used whenever possible.

Where a drug has several preparations, those of a similar type may be grouped together under a heading (e.g. 'Modified-release' for theophylline preparations, p. 192). Where there is good evidence to show that the preparations for a particular drug are not interchangeable, this is stated in a Note either in the Dose section of the monograph or by the group of preparations affected. When the dose of a drug varies according to different formulations of that drug, the right dose should be prescribed for the preparation selected.

In the case of compound preparations, the prescribing information of all constituents should be taken into account for prescribing.

## Writing prescriptions

Guidance is provided on writing prescriptions that will help to reduce medication errors, see p. 5. Prescription requirements for controlled drugs are also specified on p. 8.

## Administering drugs

If a drug can be given parenterally or by more than one route, the Dose section in the monograph or preparation record provides basic information on the route of administration. Further information on administration may be found in the monograph or preparation record, often as a Note or Counselling advice. If a class of drugs (e.g. topical corticosteroids, p. 788) share the same administration advice, this may be presented in the prescribing notes.

Appendix 4 (p. 1051) provides practical information on the preparation of intravenous drug infusions, including compatibility of drugs with standard intravenous infusion fluids, method of dilution or reconstitution, and administration rates.

## Advising patients

The prescriber and the patient should agree on the health outcomes that the patient desires and on the strategy for achieving them (see Taking Medicines to Best Effect, p. 1). Taking the time to explain to the patient (and carers) the rationale and the potential adverse effects of treatment may improve adherence. For some medicines there is a special need for counselling (e.g. appropriate posture during administration of doxycycline); this is shown in *Counselling* statements, usually in the Cautions or Dose section of a monograph, or within a preparation record if it is specific to that preparation.

Patients should be advised if treatment is likely to affect their ability to drive or operate machinery.

Cautionary and advisory labels that pharmacists are recommended to add when dispensing are included in the preparation record (see fig. 1). Details of these labels can be found in Appendix 3 (p. 1034); a list of products and their labels is included in alphabetical order of the non-proprietary and proprietary drug names.

## Monitoring drug treatment

Patients should be monitored to ensure they are achieving the expected benefits from drug treatment without any unwanted side-effects. The prescribing notes or the Cautions in the drug monograph specify any special monitoring requirements. Further information on monitoring the plasma concentration of drugs with a narrow therapeutic index can be found as a Note under the Dose section of the drug monograph.

## Identifying and reporting adverse drug reactions

Clinically relevant *Side-effects* for most drugs are included in the monographs. However, if a class of drugs (e.g. tetracyclines, p. 374) share the same side-effects, these are presented in the prescribing notes while those unique to a particular drug in that class are included in its individual drug monograph. Occasionally, side-effects may be included within a prepara-