

BNF

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**September 2019
– March 2020**

bnf.org

Medicines Information Services

Information on drug therapy

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 6655
Ipswich:	(01473) 704 431
Leeds:	(0113) 206 5377
Leicester:	(0116) 258 6491
Liverpool:	(0151) 794 8113/7, or (0151) 794 8118
London:	
● Guy's Hospital	(020) 7188 8750, or (020) 7188 3849, or (020) 7188 3855
● Northwick Park Hospital	(020) 8869 2761, or (020) 8869 3973
Newcastle:	(0191) 282 4631
Southampton:	(023) 8120 6908/9
Wales	
Cardiff:	(029) 2074 2979, or (029) 2074 2251
Scotland	
Aberdeen:	(01224) 552 316
Dundee:	(01382) 632 351, or (01382) 660 111 Extn 32351
Edinburgh:	(0131) 242 2920
Glasgow:	(0141) 211 4407
Northern Ireland	
Belfast:	(028) 9504 0558
Republic of Ireland	
Dublin:	(01) 473 0589, or (01) 453 7941 Extn 2348

United Kingdom Medicines Information (UKMI) website

www.sps.nhs.uk/

Manufacturers

Telephone numbers and email addresses of manufacturers listed in BNF Publications are shown in the Index of manufacturers p. 1621

UK Teratology Information Service

Information on drug and chemical exposures in pregnancy.

Tel: 0344 892 0909

www.uktis.org

UK Drugs in Lactation Advisory Service (UKDILAS)

Information on the compatibility of drugs with breastfeeding.

Tel: (0116) 258 6491,
or (0121) 424 7298

Email: ukdilas.enquiries@nhs.net

www.sps.nhs.uk/ukdilas

Medicines in Dentistry Specialist Advisory Service

Information on drug therapy relating to dental treatment.
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

Medicines for Children Information Leaflets

Medicines information for parents and carers.

www.medicinesforchildren.org.uk

Patient Information Lines

NHS Urgent Care Services 111

Poisons Information Services

UK National Poisons Information Service (for healthcare professionals only)

Tel: 0344 892 0111

www.toxbase.org

Sport

► Information regarding the use of medicines in sport is available from UK Anti-Doping:

www.ukad.org.uk

Tel: (020) 7842 3450

ukad@ukad.org.uk

UK Anti-Doping
Fleetbank House
2-6 Salisbury Square
London
EC4Y 8AE

► Information about the prohibited status of specific medicines based on the current World Anti-Doping Agency Prohibited List is available from Global Drug Reference Online: www.globaldro.com/UK/search

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 Monday and Friday: 9–11 a.m. and 1–2 p.m., Tuesday to Thursday: 9–11 a.m. and 1–3:30 p.m.

► travelhealthpro.org.uk/

Travel Medicine Team, Health Protection Scotland (0141) 300 1100 (2–4 p.m. weekdays)

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

► Welsh Government Switchboard English language 0300 0603300 (9 a.m.–5:30 p.m. weekdays only)

► Welsh Government Switchboard Yr Iaith Gymraeg 0300 0604400 (9 a.m.–5:30 p.m. weekdays only)

► 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



70 years supporting you to make effective decisions

Since 1949 the **British National Formulary (BNF)** has been the UK's most trusted and authoritative healthcare resource, helping to ensure the safe and effective use of medicines at the point of care.

Now, as part of our anniversary celebrations, we want to showcase the rigorous editorial process that goes into creating the content that you rely on for your everyday practice. We will also go behind the scenes at the BNF in our 'A day in the life' articles. To find out more visit **bnf.org**

We really appreciate the support you have given the BNF for our first 70 years. If you have a story to tell about how the BNF has been pivotal in your healthcare journey, we would love to hear about it on social media, just use hashtag **#BNF70years**

Find out more about the BNF's first 70 years at **bnf.org**

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 medicines information.



BNF on MedicinesComplete

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

ONLINE



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 www.evidence.nhs.uk from NICE.

PRINT

Eligible healthcare professionals will now receive one print copy a year – the September issue – to supplement online access. If you are entitled to an NHS copy please refer to page ii for full details on distribution, call 01268 495 609 or email BNF@wilmingtonhealthcare.com.

PRINT SUBSCRIPTION



BNF subscription – Take advantage of our print subscription option. We will send you the new BNF as soon as the book is published. One or two year packages (including or excluding BNF *for Children*) are available. Discounted pricing is also available on bulk sales.

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ROYAL
PHARMACEUTICAL
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Tel: +44 (0) 207 572 2266

pharmpress-support@rpharms.com

The BNF is available as a mobile app, online (bnf.nice.org.uk/) and also through MedicinesComplete; a PDA version is also available. In addition, BNF content can be integrated into a local formulary by using BNF on FormularyComplete; see www.bnf.org for details.

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/about/what-we-do/evidence-services/british-national-formulary. If you are entitled to a shared copy of the BNF, please call (0)1268 495 609 or email: BNF@wilmingtonhealthcare.com.

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

In **Wales**, email:

nwssp-primarycareservices@wales.nhs.uk

In **Northern Ireland**, email:

ni.bnf@hscni.net

About BNF content

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.

Please refer to digital versions of *BNF* for the most up-to-date content. *BNF* is published in print but interim updates are issued and published in the digital versions of *BNF*. The publishers work to ensure that the information is as accurate and up-to-date as possible at the date of publication, but knowledge and best practice in this field change regularly. *BNF*'s accuracy and currency cannot be guaranteed and neither the publishers nor the authors accept any responsibility for errors or omissions. While considerable efforts have been made to check the material in this publication, it should be treated as a guide only. Prescribers, pharmacists and other healthcare professionals are advised to check www.bnf.org for information about key updates and corrections.

Pharmaid

Numerous requests have been received from developing countries for BNFs. The Pharmaid scheme of the Commonwealth Pharmacists Association will dispatch old BNFs to certain Commonwealth countries. For more information on this scheme see commonwealthpharmacy.org/what-we-do/pharmaid/. If you would like to donate your copy email: admin@commonwealthpharmacy.org

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. Similarly, little or no information is included on medicines for very rare conditions. *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 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 Medicines Complete and the NHS Evidence portal. The more important changes are listed under Changes; 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 BNF Publications website (www.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.

BNF Publications welcomes comments from healthcare professionals. Comments and constructive criticism should be sent to:

British National Formulary,
Royal Pharmaceutical Society,
66–68 East Smithfield
London
E1W 1AW
editor@bnf.org

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

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How BNF Publications are constructed

Overview

The BNF is an independent professional publication that 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.

Hundreds of changes are made between print editions, and are published monthly in a number of digital formats. The most clinically significant updates are listed under Changes p. xvi.

The BNF is unique in bringing together authoritative, independent guidance on best practice with clinically validated drug information. Validation of information follows a standardised process, reviewing emerging evidence, best-practice guidelines, and advice from a network of clinical experts. Where the evidence base is weak, further validation is undertaken through a process of peer review. The process and its governance are outlined in greater detail in the sections that follow.

Joint Formulary Committee

The Joint Formulary Committee (JFC) is responsible for the content of the BNF. The JFC includes pharmacy, medical, nursing and lay representatives; there are also 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.

Nurse Prescribers' Advisory Group

The Nurse Prescribers' Advisory Group oversees the list of drugs approved for inclusion in the Nurse Prescribers' Formulary; the group includes representatives from a range of nursing disciplines and stakeholder organisations.

Expert advisers

The BNF uses about 60 expert clinical advisers (including doctors, pharmacists, nurses, and dentists) throughout the UK to help with 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;
- 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 works closely with a number of expert bodies that produce clinical guidelines. Drafts or pre-publication copies of guidelines are often received for comment and assimilation into the BNF.

Editorial team

BNF clinical writers have all worked as pharmacists or possess a pharmacy degree and a further, relevant post-graduate qualification, and have a sound understanding of how drugs are used in clinical practice. As a team, the clinical writers are responsible for editing, maintaining, and updating BNF content. They follow a systematic prioritisation process in response to updates to the evidence base in order to ensure the most clinically important topics are reviewed as quickly as possible. In parallel the team of clinical writers undertakes a process of rolling revalidation, aiming to review all of the content in the BNF over a 3- to 4-year period.

Amendments to the text are drafted when the clinical writers are satisfied that any new information is reliable and relevant. A set of standard criteria define when content is referred to expert advisers, the Joint Formulary Committee or other advisory groups, or submitted for peer review.

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

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 reviews 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. 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 Medicine 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 content manager; changes relating to doses receive a further check;
- identifying potential clinical problems or omissions and seeking further information from manufacturers or from expert advisers;
- 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.

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 (using tools based on SIGN methodology) 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.

In addition to the routine process, which is used to identify 'triggers' for changing the content, systematic literature searches are used to identify the best quality evidence available to inform an update. Clinical writers receive training in critical appraisal, literature evaluation, and search strategies.

Consensus guidelines

The advice in the BNF is checked against consensus guidelines produced by expert bodies. The quality of the guidelines is assessed using adapted versions of the AGREE II tool. 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 All Wales Medicines Strategy Group (AWMSG), 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.

Peer review

Although every effort is made to identify the most robust data available, inevitably there are areas where the evidence base is weak or contradictory. While the BNF has the valuable support of expert advisers and the Joint Formulary Committee, the recommendations made may be subject to a further level of scrutiny through peer review to ensure they reflect best practice.

Content for peer review is posted on bnf.org and interested parties are notified via a number of channels, including the BNF e-newsletter.

Statutory information

The BNF routinely processes relevant information from various Government bodies including Statutory Instruments and regulations affecting the Prescriptions 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 are 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.

Medicines and devices

NHS Prescription Services (from the NHS Business Services Authority) provides non-clinical, categorical information (including prices) on the medicines and devices included 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 BNF by the manufacturers provides an additional check and allows them an opportunity to raise issues about BNF's presentation of the role of various drugs; this is yet another check on the balance of BNF's advice. All comments are looked at with care and, where necessary, additional information and expert advice are sought.

Market research

Market research is conducted at regular intervals to gather feedback on specific areas of development.

Assessing the evidence

From January 2016, recommendations made in BNF publications have been evidence graded to reflect the strength of the recommendation. The addition of evidence grading is to support clinical decision making based on the best available evidence.

The BNF aims to revalidate all content over a rolling 3- to 4-year period and evidence grading will be applied to recommendations as content goes through the revalidation process. Therefore, initially, only a small number of recommendations will have been graded.

Grading system

The BNF has adopted a five level grading system from A to E, based on the former SIGN grading system. This grade is displayed next to the recommendation within the text.

Evidence used to make a recommendation is assessed for validity using standardised methodology tools based on AGREE II and assigned a level of evidence. The recommendation is then given a grade that is extrapolated from the level of evidence, and an assessment of the body of evidence and its applicability.

Evidence assigned a level 1- or 2- score has an unacceptable level of bias or confounding and is not used to form recommendations.

Levels of evidence

- **Level 1++**
High quality meta-analyses, systematic reviews of randomised controlled trials (RCTs), or RCTs with a very low risk of bias.
- **Level 1+**
Well-conducted meta-analyses, systematic reviews, or RCTs with a low risk of bias.
- **Level 1-**
Meta-analyses, systematic reviews, or RCTs with a high risk of bias.
- **Level 2++**
High quality systematic reviews of case control or cohort studies; or high quality case control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal.
- **Level 2+**
Well-conducted case control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal.
- **Level 2-**
Case control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal.
- **Level 3**
Non-analytic studies, e.g. case reports, case series.
- **Level 4**
Expert advice or clinical experience from respected authorities.

Grades of recommendation

- **Grade A: High strength**
NICE-accredited guidelines; or guidelines that pass AGREE II assessment; or at least one meta-analysis, systematic review, or RCT rated as 1++, and directly applicable to the target population; or a body of evidence consisting principally of studies rated as 1+, directly applicable to the target population, and demonstrating overall consistency of results.
- **Grade B: Moderate strength**
A body of evidence including studies rated as 2++, directly applicable to the target population, and demonstrating overall consistency of results; or extrapolated evidence from studies rated as 1++ or 1+.
- **Grade C: Low strength**
A body of evidence including studies rated as 2+, directly applicable to the target population and demonstrating overall consistency of results; or extrapolated evidence from studies rated as 2++.
- **Grade D: Very low strength**
Evidence level 3; or extrapolated evidence from studies rated as 2+; or tertiary reference source created by a transparent, defined methodology, where the basis for recommendation is clear.
- **Grade E: Practice point**
Evidence level 4.

How to use BNF Publications in print

How to use the BNF

This edition of the BNF continues to display the fundamental change to the structure of the content that was first shown in BNF 70. The changes were made to bring consistency and clarity to BNF content, and to the way that the content is arranged within print and digital products, increasing the ease with which information can be found.

For reference, the most notable changes to the structure of the content include:

- Drug monographs – where possible, all information that relates to a single drug is contained within its drug monograph, moving information previously contained in the prescribing notes. Drug monographs have also changed structurally: additional sections have been added, ensuring greater regularity around where information is located within the publication.
- Drug class monographs – where substantial amounts of information are common to all drugs within a drug class (e.g. macrolides p. 536), a drug class monograph has been created to contain the common information.
- Medicinal forms – categorical information about marketed medicines, such as price and pack size, continues to be sourced directly from the Dictionary of Medicines and Devices provided by the NHS Business Services Authority. However, clinical information curated by the BNF team has been clearly separated from the categorical pricing and pack size information and is included in the relevant section of the drug monograph.
- Section numbering – the BNF section numbering has been removed. This section numbering tied the content to a rigid structure and enforced the retention of defunct classifications, such as mercurial diuretics, and hindered the relocation of drugs where therapeutic use had altered. It also caused constraints between the BNF and BNF *for Children*, where drugs had different therapeutic uses in children.
- Appendix 4 – the content has been moved to individual drug monographs. The introductory notes have been replaced with a new guidance section, Guidance on intravenous infusions p. 16.

Introduction

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. This *How to Use the BNF* is key in reinforcing the details of the new structure of the BNF to all healthcare professionals involved with prescribing, monitoring, supplying, and administering medicines, as well as supporting the learning of students training to join these professions.

Structure of the BNF

This BNF edition continues to broadly follow the high-level structure of earlier editions of the BNF (i.e. those published before BNF 70):

Front matter, comprising information on how to use the BNF, the significant content changes in each edition, and guidance on various prescribing matters (e.g. prescription writing, the use of intravenous drugs, particular considerations for special patient populations).

Chapters, containing drug monographs describing the uses, doses, safety issues and other considerations involved in the use of drugs; drug class monographs; and treatment summaries, covering guidance on the selection of drugs. Monographs and treatment summaries are divided into chapters based on specific aspects of medical care, such as Chapter 5, Infections, or Chapter 16, Emergency treatment

of poisoning; or drug use related to a particular system of the body, such as Chapter 2, Cardiovascular.

Within each chapter, content is organised alphabetically by therapeutic use (e.g. Airways disease, obstructive), with the treatment summaries first, (e.g. asthma), followed by the monographs of the drugs used to manage the conditions discussed in the treatment summary. Within each therapeutic use, the drugs are organised alphabetically by classification (e.g. Antimuscarinics, Beta 2-agonist bronchodilators) and then alphabetically within each classification (e.g. Acclidinium bromide, Glycopyrronium bromide, Ipratropium bromide).

Appendices, covering interactions, borderline substances, cautionary and advisory labels, and woundcare.

Back matter, covering the lists of medicines approved by the NHS for Dental and Nurse Practitioner prescribing, proprietary and specials manufacturers' contact details, and the index. Yellow cards are also included, to facilitate the reporting of adverse events, as well as quick reference guides for life support and key drug doses in medical emergencies, for ease of access.

Navigating the BNF

The contents page provides the high-level layout of information within the BNF; and in addition, each chapter begins with a small contents section, describing the therapeutic uses covered within that chapter. Once in a chapter, location is guided by the side of the page showing the chapter number (the *thumbnail*), alongside the chapter title. The top of the page includes the therapeutic use (the *running head*) alongside the page number.

Once on a page, visual cues aid navigation: treatment summary information is in black type, with therapeutic use titles similarly styled in black, whereas the use of colour indicates drug-related information, including drug classification titles, drug class monographs, and drug monographs.

Although navigation is possible by browsing, primarily access to the information is via the index, which covers the titles of drug class monographs, drug monographs, and treatment summaries. The index also includes the names of branded medicines and other topics of relevance, such as abbreviations, guidance sections, tables, and images.

Content types

Treatment summaries

Treatment summaries are of three main types;

- an overview of delivering a drug to a particular body system (e.g. Skin conditions, management p. 1220)
- a comparison between a group or groups of drugs (e.g. beta-adrenoceptor blockers (systemic) p. 147)
- an overview of the drug management or prophylaxis of common conditions intended to facilitate rapid appraisal of options (e.g. Hypertension p. 140, or Malaria, prophylaxis p. 607).

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

Monographs

Overview

In earlier editions (i.e. before BNF 70), a systemically administered drug with indications for use in different body systems was split across the chapters relating to those body systems. So, for example, codeine phosphate p. 454 was found in chapter 1, for its antitoxicity effects and chapter 4 for its analgesic effects. However, the monograph in

chapter 1 contained only the dose and some selected safety precautions.

Now, all of the information for the systemic use of a drug is contained within one monograph, so codeine phosphate p. 454 is now included in chapter 4. This carries the advantage of providing all of the information in one place, so the user does not need to flick back and forth across several pages to find all of the relevant information for that drug. Cross references are included in chapter 1, where the management of diarrhoea is discussed, to the drug monograph to assist navigation.

Where drugs have systemic and local uses, for example, chloramphenicol p. 568, 1173, 1196, and the considerations around drug use are markedly different according to the route of administration, the monograph is split, as with earlier editions, into the relevant chapters.

This means that the majority of drugs are still placed in the same chapters and sections as earlier editions, and although there may be some variation in order, all of the relevant information will be easier to locate.

One of the most significant changes to the monograph structure is the increased granularity, with a move from around 9 sections to over 20 sections; sections are only included when relevant information has been identified. The following information describes these sections and their uses in more detail.

Nomenclature

Monograph titles follow the convention of recommended international non-proprietary names (iNNS), or, in the absence of a iNNS, British Approved Names. Relevant synonyms are included below the title and, in some instances a brief description of the drug action is included. Over future editions these drug action statements will be rolled out for all drugs.

In some monographs, immediately below the nomenclature or drug action, there are a number of cross references or flags used to signpost the user to any additional information they need to consider about a drug. This is most common for drugs formulated in combinations, where users will be signposted to the monographs for the individual ingredients (e.g. senna with ispaghula husk p. 63) or for drugs that are related to a drug class monograph (see Drug class monographs, below).

Indication and dose

User feedback has highlighted that one of the main uses of the BNF is identifying indications and doses of drugs. Therefore, indication and dose information has been promoted to the top of the monograph and highlighted by a coloured panel to aid quick reference.

The indication and dose section is more highly structured than in earlier editions, giving greater clarity around which doses should be used for which indications and by which route. In addition, if the dose varies with a specific preparation or formulation, that dosing information has been moved out of the preparations section and in to the indication and dose panel, under a heading of the preparation name.

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).

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 relevant age range and may vary according to their age or body-weight.

In earlier editions of the BNF, age ranges and weight ranges overlapped. For clarity and to aid selection of the correct dose, wherever possible these age and weight ranges now do not overlap. When interpreting age ranges it is important to understand that a patient is considered to be 64 up until the point of their 65th birthday, meaning that an age

range of adult 18 to 64 is applicable to a patient from the day of their 18th birthday until the day before their 65th birthday. All age ranges should be interpreted in this way. Similarly, when interpreting weight ranges, it should be understood that a weight of up to 30 kg is applicable to a patient up to, but not including, the point that they tip the scales at 30 kg and a weight range of 35 to 59 kg is applicable to a patient as soon as they tip the scales at 35 kg right up until, but not including, the point that they tip the scales at 60 kg. All weight ranges should be interpreted in this way.

In all circumstances, it is important to consider the patient in question and their physical condition, and select the dose most appropriate for the individual.

Other information relevant to Indication and dose

The dose panel also contains, where known, an indication of **pharmacokinetic considerations** that may affect the choice of dose, and **dose equivalence** information, which may aid the selection of dose when switching between drugs or preparations.

The BNF includes **unlicensed use** of medicines when the clinical need cannot be met by licensed medicines; such use should be supported by appropriate evidence and experience. When the BNF recommends an unlicensed medicine or the 'off-label' use of a licensed medicine, this is shown below the indication and dose panel in the unlicensed use section.

Minimising harm and drug safety

The drug chosen to treat a particular condition should minimise the patient's susceptibility to adverse effects and, where co-morbidities exist, have minimal detrimental effects on the patient's other diseases. To achieve this, the *Contra-indications*, *Cautions* and *Side-effects* of the relevant drug should be reviewed.

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 *Important safety advice* section in the BNF, delineated by a coloured outline box, highlights important safety concerns, often those raised by regulatory authorities or guideline producers. Safety warnings issued by the Commission on Human Medicines (CHM) or Medicines and Healthcare products Regulatory Agency (MHRA) are found here.


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, followed by details of drug interactions.


Use of drugs in specific patient populations

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. 19, and *Prescribing in renal impairment* p. 19. Information about drugs that should be avoided or used with caution in hepatic disease or renal

Typical layout of a monograph and associated medicinal forms

1 Class Monographs and drug monographs

In most cases, all information that relates to an individual drug is contained in its drug monograph and there is no symbol. Class monographs have been created where substantial amounts of information are common to all drugs within a drug class, these are indicated by a flag symbol in a circle: 

Drug monographs with a corresponding class monograph are indicated by a tab with a flag symbol: 

The page number of the corresponding class monograph is indicated within the tab. For further information, see How to use BNF Publications

2 Drug classifications

Used to inform users of the class of a drug and to assist in finding other drugs of the same class. May be based on pharmacological class (e.g. opioids) but can also be associated with the use of the drug (e.g. cough suppressants)

3 Review date

The date of last review of the content

4 Specific preparation name

If the dose varies with a specific preparation or formulation it appears under a heading of the preparation name

Class monograph 1

CLASSIFICATION 2

 1234

Drug monograph 1

 01-Jun-2016

(Synonym) another name by which a drug may be known

- **DRUG ACTION** how a drug exerts its effect in the body

● **INDICATIONS AND DOSE**

Indications are the clinical reasons a drug is used. The dose of a drug will often depend on the indications

Indication

- ▶ **ROUTE**
- ▶ **Age groups:** [Child/Adult/Elderly]
Dose and frequency of administration (max. dose)

SPECIFIC PREPARATION NAME 4

Indication

- ▶ **ROUTE**
- ▶ **Age groups:** [Child/Adult/Elderly]
Dose and frequency of administration (max. dose)

DOSE ADJUSTMENTS DUE TO INTERACTIONS dosing information when used concurrently with other drugs

DOSES AT EXTREMES OF BODY-WEIGHT dosing information for patients who are overweight or underweight

DOSE EQUIVALENCE AND CONVERSION information around the bioequivalence between formulations of the same drug, or equivalent doses of drugs that are members of the same class

PHARMACOKINETICS how the body affects a drug (absorption, distribution, metabolism, and excretion)

POTENCY a measure of drug activity expressed in terms of the concentration required to produce an effect of given intensity

- **UNLICENSED USE** describes the use of medicines outside the terms of their UK licence (off-label use), or use of medicines that have no licence for use in the UK

IMPORTANT SAFETY INFORMATION

Information produced and disseminated by drug regulators often highlights serious risks associated with the use of a drug, and may include advice that is mandatory

- **CONTRA-INDICATIONS** circumstances when a drug should be avoided
- **CAUTIONS** details of precautions required
- **INTERACTIONS** when one drug changes the effects of another drug; the mechanisms underlying drug interactions are explained in Appendix 1
- **SIDE-EFFECTS** listed in order of frequency, where known, and arranged alphabetically
- **ALLERGY AND CROSS-SENSITIVITY** for drugs that carry an increased risk of hypersensitivity reactions
- **CONCEPTION AND CONTRACEPTION** potential for a drug to have harmful effects on an unborn child when prescribing for a woman of childbearing age or for a man trying to father a child; information on the effect of drugs on the efficacy of latex condoms or diaphragms

- **PREGNANCY** advice on the use of a drug during pregnancy
- **BREAST FEEDING** EvGr advice on the use of a drug during breast feeding A 5
- **HEPATIC IMPAIRMENT** advice on the use of a drug in hepatic impairment
- **RENAL IMPAIRMENT** advice on the use of a drug in renal impairment
- **PRE-TREATMENT SCREENING** covers one off tests required to assess the suitability of a patient for a particular drug
- **MONITORING REQUIREMENTS** specifies any special monitoring requirements, including information on monitoring the plasma concentration of drugs with a narrow therapeutic index
- **EFFECTS ON LABORATORY TESTS** for drugs that can interfere with the accuracy of seemingly unrelated laboratory tests
- **TREATMENT CESSATION** specifies whether further monitoring or precautions are advised when the drug is withdrawn
- **DIRECTIONS FOR ADMINISTRATION** practical information on the preparation of intravenous drug infusions; general advice relevant to other routes of administration
- **PRESCRIBING AND DISPENSING INFORMATION** practical information around how a drug can be prescribed and dispensed including details of when brand prescribing is necessary
- **HANDLING AND STORAGE** includes information on drugs that can cause adverse effects to those who handle them before they are taken by, or administered to, a patient; advice on storage conditions
- **PATIENT AND CARER ADVICE** for drugs with a special need for counselling
- **PROFESSION SPECIFIC INFORMATION** provides details of the restrictions certain professions such as dental practitioners or nurse prescribers need to be aware of when prescribing on the NHS
- **NATIONAL FUNDING/ACCESS DECISIONS** details of NICE Technology Appraisals, SMC advice and AWMSG advice
- **LESS SUITABLE FOR PRESCRIBING** preparations that are considered by the Joint Formulary Committee to be less suitable for prescribing
- **EXCEPTION TO LEGAL CATEGORY** advice and information on drugs which may be sold without a prescription under specific conditions

● **MEDICINAL FORMS**

Form

CAUTIONARY AND ADVISORY LABELS if applicable
 EXCIPIENTS clinically important but not comprehensive [consult manufacturer information for full details]
 ELECTROLYTES if clinically significant quantities occur

► **Preparation name** (Manufacturer/*Non-proprietary*)

Drug name and strength pack sizes PoM 6 Prices

Combinations available this indicates a combination preparation is available and a cross reference page number is provided to locate this preparation

● **Evidence grading**

Evidence grading to reflect the strengths of recommendations will be applied as content goes through the revalidation process. A five level evidence grading system based on the former SIGN grading system has been adopted. The grades A B C D E are displayed next to the recommendations within the text, and are preceded by the symbol: EvGr

For further information, see How BNF Publications are constructed

● **Legal categories**

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)

CD1 CD2 CD3 CD4-1 CD4-2 CD5 These symbols 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

Not all monographs include all possible sections; sections are only included when relevant information has been identified

impairment can be found in drug monographs under *Hepatic impairment* and *Renal impairment* (e.g. fluconazole p. 595).

Similarly, 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. 23 and Prescribing in breast-feeding p. 23. The Treatment Summaries provide guidance on the drug treatment of common conditions that can occur during pregnancy and breast-feeding (e.g. Asthma, acute p. 240). 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. 595).

A section, *Conception and contraception*, containing information around considerations for females of childbearing potential or men who might father a child (e.g. isotretinoin p. 1270) has been included.

Administration and monitoring

When selecting the most appropriate drug, it may be necessary to screen the patient for certain genetic markers or metabolic states. This information is included within a section called *Pre-treatment screening* (e.g. abacavir p. 647). This section covers one-off tests required to assess the suitability of a patient for a particular drug.

Once the drug has been selected, it needs to be given in the most appropriate manner. A *Directions for administration* section contains the information about intravenous administration previously located in Appendix 4. This 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. In addition, general advice relevant to other routes of administration is provided within this section (e.g. fentanyl p. 458).

After selecting and administering the most appropriate drug by the most appropriate route, patients should be monitored to ensure they are achieving the expected benefits from drug treatment without any unwanted side-effects. The *Monitoring* section specifies any special monitoring requirements, including information on monitoring the plasma concentration of drugs with a narrow therapeutic index (e.g. theophylline p. 274). Monitoring may, in certain cases, be affected by the impact of a drug on laboratory tests (e.g. hydroxocobalamin p. 1026), and this information is included in *Effects on laboratory tests*.

In some cases, when a drug is withdrawn, further monitoring or precautions may be advised (e.g. clonidine hydrochloride p. 145): these are covered under *Treatment cessation*.

Choice and supply

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*). 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 p. 564); this is shown in *Patient and carer advice*.

Other information contained in the latter half of the monograph also helps prescribers and those dispensing medicines choose medicinal forms (by indicating information such as flavour or when branded products may not be interchangeable (e.g. diltiazem hydrochloride p. 157), assess the suitability of a drug for prescribing, understand the NHS funding status for a drug (e.g. sildenafil p. 813), or assess when a patient may be able to purchase a drug without prescription (e.g. loperamide hydrochloride p. 66).

Medicinal forms

In the BNF, preparations follow immediately after the monograph for the drug that is their main ingredient.

In earlier editions, when a particular preparation had safety information, dose advice or other clinical information specific to the product, it was contained within the preparations section. This information has been moved to the relevant section in the main body of the monograph under a heading of the name of the specific medicinal form (e.g. peppermint oil p. 48).

The medicinal forms (formerly preparations) section 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, as well as pharmacy medicines and medicines on the general sales list. Practitioners are reminded, by a statement under the heading of "Medicinal Forms" that not all products containing a specific drug ingredient may be similarly licensed. To be clear on the precise licensing status of specific medicinal forms, practitioners should check the product literature for the particular product being prescribed or dispensed.

Details of all medicinal forms available on the dm+d for each drug in BNF Publications appears online on MedicinesComplete. In print editions, due to space constraints, only certain branded products are included in detail. Where medicinal forms are listed they should not be inferred as equivalent to the other brands listed under the same form heading. For example, all the products listed under a heading of "Modified release capsule" will be available as modified release capsules, however, the brands listed under that form heading may have different release profiles, the available strengths may vary and/or the products may have different licensing information. As with earlier editions of the BNF, practitioners must ensure that the particular product being prescribed or dispensed is appropriate.

As medicinal forms are derived from dm+d data, some drugs may appear under names derived from that data; this may vary slightly from those in previous BNF versions, e.g. sodium acid phosphate, is now sodium dihydrogen phosphate anhydrous.

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. When dispensing liquid preparations, a sugar-free preparation should always be used in preference to one containing sugar. Patients receiving medicines containing cariogenic sugars should be advised of appropriate dental hygiene measures to prevent caries.

In earlier editions, the BNF only included excipients and electrolyte information for proprietary medicines. This information is now covered at the level of the dose form (e.g. tablet). It is not possible to keep abreast of all of the generic products available on the UK market, and so this information serves as a reminder to the healthcare professional that, if the presence of a particular excipient is of concern, they should check the product literature for the particular product being prescribed or dispensed.

Cautionary and advisory labels that pharmacists are recommended to add when dispensing are included in the medicinal forms section. Details of these labels can be found in Appendix 3, Guidance for cautionary and advisory labels p. 1588. As these labels have now been applied at the level of the dose form, a full list of medicinal products with their relevant labels would be extensive. This list has therefore been removed, but the information is retained within the monograph.

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

Prices in the BNF

Basic NHS **net prices** are given in the BNF to provide an indication of relative cost. Where there is a choice of suitable preparations for a particular disease or condition the relative cost may be used in making a selection. Cost-effective prescribing must, however, take into account other factors (such as dose frequency and duration of treatment) that affect the total cost. The use of more expensive drugs is justified if it will result in better treatment of the patient, or a reduction of the length of an illness, or the time spent in hospital.



Prices are regularly updated using the Drug Tariff and proprietary price information published by the NHS dictionary of medicines and devices (dm+d, www.nhsbsa.nhs.uk/pharmacies-gp-practices-and-appliance-contractors/dictionary-medicines-and-devices-dmd). The weekly updated dm+d data (including prices) can be accessed using the dm+d browser of the NHS Business Services Authority (apps.nhsbsa.nhs.uk/DMDBrowser/DMDBrowser.do). Prices have been calculated from the net cost used in pricing NHS prescriptions and generally reflect whole dispensing packs. Prices for extemporaneously prepared preparations are not provided in the BNF as prices vary between different manufacturers. In Appendix 4, prices stated are per dressing or bandage.

BNF prices are not suitable for quoting to patients seeking private prescriptions or contemplating over-the-counter purchases because they do not take into account VAT, professional fees, and other overheads.

A fuller explanation of costs to the NHS may be obtained from the Drug Tariff. Separate drug tariffs are applicable to England and Wales (www.ppa.org.uk/ppa/edt_intro.htm), Scotland (www.isdscotland.org/Health-Topics/Prescribing-and-Medicines/Scottish-Drug-Tariff/), and Northern Ireland (www.hscbusiness.hscni.net/services/2034.htm); prices in the different tariffs may vary.

Drug class monographs

In earlier editions of the BNF, information relating to a class of drugs sharing the same properties (e.g. tetracyclines p. 564), was contained within the prescribing notes. In the updated structure, drug class monographs have been created to contain the common information; this ensures such information is easier to find, and has a more regularised structure.

For consistency and ease of use, the class monograph follows the same structure as a drug monograph. Class monographs are indicated by the presence of a flag  (e.g. beta-adrenoceptor blockers (systemic) p. 147). If a drug monograph has a corresponding class monograph, that needs to be considered in tandem, in order to understand the full information about a drug, the monograph is also indicated by a flag  (e.g. metoprolol tartrate p. 154). Within this flag, the page number of the drug class monograph is provided (e.g. 1234), to help navigate the user to this information. This is particularly useful where occasionally, due to differences in therapeutic use, the drug monograph may not directly follow the drug class monograph (e.g. sotalol hydrochloride p. 108).

Evidence grading

The BNF has adopted a five level evidence grading system (see How BNF Publications are constructed p. viii). Recommendations that are evidence graded can be identified by a symbol appearing immediately before the recommendation. The evidence grade is displayed at the end of the recommendation.

Other content

Nutrition

Appendix 2, Borderline substances p. 1556, includes tables of ACBS-approved enteral feeds and nutritional supplements based on their energy and protein content. There are separate tables for specialised formulae for specific clinical

conditions. Classified sections on foods for special diets and nutritional supplements for metabolic diseases are also included.

Wound dressings

A table on wound dressings in Appendix 4, Wound management products and elasticated garments p. 1591, allows an appropriate dressing to be selected based on the appearance and condition of the wound. Further information about the dressing can be found by following the cross-reference to the relevant classified section in the Appendix.

Advanced wound contact dressings have been classified in order of increasing absorbency.

Other useful information

Finding significant changes in the BNF

- **Changes**, provides a list of significant changes, dose changes, classification changes, new names, and new preparations that have been incorporated into the BNF, as well as a list of preparations that have been discontinued and removed from the BNF. 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. So many changes are made for each update of the BNF, that not all of them can be accommodated in the *Changes* section. We encourage healthcare professionals to regularly review the prescribing information on drugs that they encounter frequently;
- **Changes to the Dental Practitioners' Formulary**, are located at the end of the Dental List;
- **E-newsletter**, the BNF & BNFC e-newsletter service is available free of charge. It alerts healthcare professionals to details of significant changes in the clinical content of these publications and to the way that this information is delivered. Newsletters also review clinical case studies, provide tips on using these publications effectively, and highlight forthcoming changes to the publications. To sign up for e-newsletters go to www.bnf.org.
- An e-learning programme developed in collaboration with the Centre for Pharmacy Postgraduate Education (CPPE), enables pharmacists to identify and assess how significant changes in the BNF affect their clinical practice. The module can be found at www.cppe.ac.uk.

Using other sources for medicines information

The BNF is designed as a digest for rapid reference. 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.

Changes

Monthly updates are provided online via Medicines Complete and the NHS Evidence portal. The changes listed below are cumulative (from one print edition to the next).

Significant changes

Significant changes that appear in the print edition of BNF 78 (September 2019 – March 2020):

- Abemaciclib p. 967 with an aromatase inhibitor for previously untreated, hormone receptor-positive, HER2-negative, locally advanced or metastatic breast cancer [NICE guidance].
- Alemtuzumab p. 857 (*Lemtrada*®): restriction of use due to serious safety concerns [MHRA/CHM advice].
- Anthrax vaccine p. 1297: updated guidance in-line with Public Health England recommendations.
- Attention deficit hyperactivity disorder p. 346: updated guidance on management.
- Belimumab p. 845 (*Benlysta*®): increased risk of serious psychiatric events seen in clinical trials [MHRA/CHM advice].
- Benralizumab p. 266 for treating severe eosinophilic asthma [NICE guidance].
- Breast cancer p. 942: updated guidance on management.
- Brentuximab vedotin p. 864 for treating CD30-positive cutaneous T-cell lymphoma [NICE guidance].
- Brigatinib p. 971 for treating ALK-positive advanced non-small-cell lung cancer after crizotinib [NICE guidance].
- Carbimazole p. 771: increased risk of congenital malformations; strengthened advice on contraception [MHRA/CHM advice].
- Carbimazole p. 771: risk of acute pancreatitis [MHRA/CHM advice].
- Certolizumab pegol p. 1111 for treating moderate to severe plaque psoriasis [NICE guidance].
- Cholera vaccine p. 1298: updated guidance in-line with Public Health England recommendations.
- Chronic heart failure p. 191: updated guidance on management.
- Controlled drugs and drug dependence p. 8: reclassification of gabapentin p. 315 and pregabalin p. 324 as Class C and Schedule 3 Controlled Drugs.
- Daratumumab p. 866 with bortezomib p. 964 and dexamethasone p. 675 for previously treated multiple myeloma [NICE guidance].
- Direct-acting antivirals for chronic hepatitis C (dasabuvir p. 631, elbasvir with grazoprevir p. 624, glecaprevir with pibrentasvir p. 631, ombitasvir with paritaprevir and ritonavir p. 625, and sofosbuvir p. 628): risk of hypoglycaemia in patients with diabetes [MHRA/CHM advice].
- Elvitegravir boosted with cobicistat: avoid use in pregnancy due to risk of treatment failure and maternal-to-child transmission of HIV-1 [MHRA/CHM advice] (see elvitegravir with cobicistat, emtricitabine and tenofovir alafenamide p. 649 and elvitegravir with cobicistat, emtricitabine and tenofovir disoproxil p. 650).
- Emollients (see Emollient and barrier preparations p. 1221): new information about risk of severe and fatal burns with paraffin-containing and paraffin-free emollients [MHRA/CHM advice].
- Encorafenib p. 978 and binimetinib p. 969 for unresectable or metastatic BRAF V600 mutation-positive melanoma [NICE guidance].
- Epilepsy p. 305: inclusion of guidance for the management of Dravet syndrome and Lennox-Gastaut syndrome.
- Ertugliflozin p. 707 as monotherapy or with metformin for treating type 2 diabetes [NICE guidance].
- Fluoroquinolone antibiotics (ciprofloxacin p. 558, levofloxacin p. 559, moxifloxacin p. 560, ofloxacin p. 561): new restrictions and precautions for use due to very rare reports of disabling and potentially long-lasting or irreversible side effects [MHRA/CHM advice].
- Gabapentin p. 315 (*Neurontin*®) and risk of abuse and dependence: new scheduling requirements from 1 April [MHRA/CHM advice].
- Gemtuzumab ozogamicin p. 869 for untreated acute myeloid leukaemia [NICE guidance].
- Heavy menstrual bleeding p. 753: updated recommendations for the use of ulipristal acetate.
- Hydrocortisone p. 1216 muco-adhesive buccal tablets: should not be used off-label for adrenal insufficiency in children due to serious risks [MHRA/CHM advice].
- Immunisation schedule p. 1296: updated National flu immunisation programme in-line with Public Health England recommendations.
- Influenza vaccine p. 1301: updated guidance in-line with Public Health England recommendations.
- Ipilimumab p. 871 (*Yervoy*®): reports of cytomegalovirus (CMV) gastrointestinal infection or reactivation [MHRA/CHM advice].
- Irinotecan hydrochloride p. 926, liposomal formulations (*Onivyde*®): reports of serious and fatal thromboembolic events [MHRA/CHM advice].
- Japanese encephalitis vaccine p. 1302: updated guidance in-line with Public Health England recommendations.
- Lenvatinib p. 987 for untreated advanced hepatocellular carcinoma [NICE guidance].
- Liposomal daunorubicin with cytarabine p. 900 for untreated acute myeloid leukaemia [NICE guidance].
- Malaria, prophylaxis p. 607: updated country recommendations in the Recommended regimens for prophylaxis against malaria in-line with Public Health England.
- Malaria, prophylaxis p. 607: updated guidance in-line with Public Health England recommendations.
- Methotrexate p. 913: updated recommendations for conception and contraception.
- Nivolumab p. 873 for adjuvant treatment of completely resected melanoma with lymph node involvement or metastatic disease [NICE guidance].
- Olaratumab p. 876 (*Lartruvo*®): no new patients to be prescribed due to study showing no clinical benefit [MHRA/CHM advice].
- Pembrolizumab p. 878 for adjuvant treatment of resected melanoma with high risk of recurrence [NICE guidance].
- Pembrolizumab p. 878 with pemetrexed and platinum chemotherapy for untreated, metastatic, non-squamous non-small-cell lung cancer [NICE guidance].
- Pertuzumab p. 880 for adjuvant treatment of HER2-positive early stage breast cancer [NICE guidance].
- Pneumococcal vaccine p. 1304: updated guidance in-line with Public Health England recommendations.
- Pregabalin p. 324 (*Lyrica*®) and risk of abuse and dependence: new scheduling requirements from 1 April [MHRA/CHM advice].
- Prescribing in pregnancy p. 23: Medicines with teratogenic potential, what is effective contraception and how often is pregnancy testing needed? [MHRA/CHM advice].
- Quinolones p. 557: new MHRA/CHM advice on restrictions and precautions for use of fluoroquinolone antibiotics.
- Regorafenib p. 996 for previously treated advanced hepatocellular carcinoma [NICE guidance].
- Renal and ureteric stones p. 788: new guidance on management.
- Respiratory system infections, antibacterials therapy p. 515: new guidance for acute exacerbations of Bronchiectasis (non-cystic fibrosis).

- Respiratory system infections, antibacterial therapy p. 515: updated guidance for acute exacerbations of Chronic obstructive pulmonary disease.
- Respiratory system infections, antibacterial therapy p. 515: new guidance on management of Cough, acute.
- SGLT2 inhibitors (canagliflozin p. 702, dapagliflozin p. 704, empagliflozin p. 706, ertugliflozin p. 707): reports of Fournier's gangrene (necrotising fasciitis of the genitalia or perineum) [MHRA/CHM advice].
- Smoking cessation p. 497: updated guidance.
- Tapentadol p. 471 (*Palexia*[®]): risk of seizures and reports of serotonin syndrome when co-administered with other medicines [MHRA/CHM advice].
- Tildrakizumab p. 1260 for treating moderate to severe plaque psoriasis [NICE guidance].
- Tofacitinib p. 1105 for moderately to severely active ulcerative colitis [NICE guidance].
- Tofacitinib p. 1105 (*Xeljanz*[®]): increased risk of pulmonary embolism and mortality in rheumatoid arthritis patients receiving 10 mg twice daily in a clinical trial [MHRA/CHM advice].
- Typhoid vaccine p. 1308: updated guidance in-line with Public Health England recommendations.
- Valproate medicines and serious harms in pregnancy: new Annual Risk Acknowledgement Form and clinical guidance from professional bodies to support compliance with the Pregnancy Prevention Programme [MHRA/CHM advice] (see sodium valproate p. 327 and valproic acid p. 354).
- Valproate medicines (see sodium valproate p. 327 and valproic acid p. 354): are you in acting in compliance with the pregnancy prevention measures? [MHRA/CHM advice].
- Vandetanib p. 1003 for treating medullary thyroid cancer [NICE guidance].
- Venetoclax p. 1007 with rituximab p. 882 for previously treated chronic lymphocytic leukaemia [NICE guidance].
- Yellow fever vaccine, live p. 1327 (*Stamaril*[®]) and fatal adverse reactions: extreme caution needed in people who may be immunosuppressed [MHRA/CHM advice].
- Yellow fever vaccine, live p. 1327 (*Stamaril*[®]) and fatal adverse reactions: extreme caution needed in those aged 60 years and older [MHRA/CHM advice] (BNF only).
- Yellow fever vaccine p. 1309: updated guidance in-line with Public Health England recommendations.

Dose changes

Changes in dose statements that appear in the print edition of BNF 78 (September 2019 — March 2020):

- Adalimumab p. 1108 [maintenance dosing updated].
- Alirocumab p. 206 [dosing options for primary hypercholesterolaemia or mixed dyslipidaemia].
- Anthrax vaccine p. 1312 [dosing schedule updated].
- Imipenem with cilastatin p. 522 [dosing recommendation in renal impairment updated].
- Japanese encephalitis vaccine p. 1323 [dosing schedule updated].
- *Malarone*[®] (atovaquone with proguanil hydrochloride p. 615) [update to weight range for prophylaxis of falciparum malaria].
- Osetamivir p. 662 [duration of treatment in immunocompromised patients].
- Pembrolizumab p. 878 [dose for non-small cell lung cancer (following prior chemotherapy) and melanoma].
- Rivaroxaban p. 128 [clarification of dosing options for prophylaxis of recurrent deep-vein thrombosis and pulmonary embolism].
- Secukinumab p. 1100 [dosing for psoriatic arthritis].

New preparations

New preparations that appear in the print edition of BNF 78 (September 2019 — March 2020):

- *Alunbrig*[®] [brigatinib p. 971].
- *Braftovi*[®] [encorafenib p. 978].
- *Buvidal*[®] [buprenorphine p. 447].
- Cidofovir p. 637.
- *Delstrigo*[®] [lamivudine with tenofovir disoproxil and doravirine p. 653].
- *Diacomit*[®] [stiripentol p. 330].
- *Erleada*[®] [apalutamide p. 946].
- *Fortacin*[®] [lidocaine with prilocaine p. 1354].
- *Ilumetri*[®] [tildrakizumab p. 1260].
- *Intrrosa*[®] [prasterone p. 833].
- *Mektovi*[®] [binimetinib p. 969].
- *Namuscla*[®] [mexiletine p. 1126].
- *Ozempic*[®] [semaglutide p. 701].
- *Pifeltro*[®] [doravirine p. 644].
- *Prevydis*[®] [letermovir p. 639].
- *Steglatro*[®] [ertugliflozin p. 707].
- *Suliqua*[®] [insulin glargine with lixisenatide p. 718].
- *Symkevi*[®] [tezacaftor with ivacaftor p. 295].
- *Tegsedi*[®] [inotersen p. 408].
- *Testavan*[®] [testosterone p. 768].
- *Verzenio*[®] [abemaciclib p. 967].