Using the British National Formulary effectively

Abstract
Nursing students, nurses and other healthcare professionals involved in prescribing, dispensing, administration and monitoring of medicines should be able to navigate and use the British National Formulary (BNF) effectively. Recent changes to the structure of the BNF have resulted in new symbols, additional sections in drug and drug-class monographs, and a reduction in the amount of cross-referencing between chapters. This article explores how healthcare professionals can access the information in the BNF to ensure that medicines use is optimised, therapeutic effects are maximised, and adverse drug reactions and drug interactions are minimised.

Keywords
British National Formulary, BNF, drugs formulary, medicines administration, medicines management, prescribing

Aims and intended learning outcomes
This article aims to introduce the revised format of the British National Formulary (BNF) (2015, 2016), explain how information may be accessed, and develop the healthcare professional’s knowledge and understanding of the BNF to enable safe and effective prescribing, dispensing, administration and monitoring of medicines. After reading this article and completing the time out activities you should be able to:

» Explain how the BNF is structured.
» Locate information in the BNF by body system, drug class, drug name or therapeutic use.
» Discuss the significance of each of the different sections that may be included in a drug or drug-class monograph (detailed accounts of a drug or drug class).
» Identify the indications, cautions, contraindications and potential interactions that pertain to a specific drug.
» Explain the reporting system for adverse drug reactions.

Introduction
The BNF provides nursing students, nurses and other healthcare professionals, and prescribers with up to date, independent and evidence-based information regarding medicines. It is an essential reference source for any healthcare professional involved in prescribing, dispensing, administration and monitoring of medicines.

The BNF is a joint publication by the BMJ Group and the Royal Pharmaceutical Society of Great Britain. The Joint Formulary Committee is responsible for the content of the BNF. The committee involves doctors appointed by the BMJ Group, pharmacists appointed by the Royal Pharmaceutical Society, nurses, and representatives from the Medicines and Healthcare products Regulatory Agency (MHRA). The information provided in the BNF is independent of the pharmaceutical industry, authenticated against best practice guidance and emerging evidence, including systematic reviews, and informed by a network of approximately 60 expert clinical advisers (BNF 2015, 2016).
The BNF is published twice each year in March and September and is provided free of charge to NHS healthcare professionals in England by the National Institute for Health and Care Excellence (NICE) annually in September. In 2015, the Joint Formulary Committee introduced a new format to their publications, BNF No. 70 (BNF 2015) and the BNF for Children (BNFC) 2015-2016 (BNFC 2015). This article provides an overview of the new format to provide a guide to assist healthcare professionals and prescribers in its use.

**Structure of the BNF**
The BNF comprises four sections. Section one includes essential tables and information that are often overlooked. This includes information on how to use the BNF, any content changes since its last publication and prescribing guidance specific to particular contexts. Section two is divided into 16 chapters. Each chapter pertains to a specific body system, for example the nervous system, or an aspect of medical care, for example vaccines. The third section contains four appendices, detailing interactions, borderline substances such as enteral feeds and nutritional supplements, cautionary and advisory labels, and wound management products. The final section lists the medicines approved for prescribing by dental practitioners and nurse prescribers, an index of proprietary manufacturers, an index of special order manufacturers, an A-Z drug index and MHRA Yellow Cards for the reporting of adverse drug reactions. This section also includes the Adult Advanced Life Support Algorithm, information on medical emergencies in the community, approximate conversions and units, and recommended wording of cautionary and advisory labels. The inside back cover provides a list of abbreviations and symbols used in the BNF.

**TIME OUT 1**
In section one of the BNF, locate the information related to prescribing in palliative care. Identify the equivalent dose of subcutaneous diamorphine hydrochloride to 120mg of oral morphine sulfate over 24 hours. Check your answer with another member of staff or a pharmacist.

**How to find information**
The easiest way to find a drug in the BNF is to look it up in the drug index – an alphabetical list of all entry headings from generic drug names, branded or proprietary drug names and treatment summaries. For some drugs or drug groups, more than one page number may be listed. In such cases, healthcare professionals should refer to the page number that appears in bold, because this usually signifies the entry with the most comprehensive information. Each of the 16 chapters in section two has a header at the top of the page, which identifies the therapeutic use of the drug. ‘Thumbnails’ at the side of the page, indicate the chapter number and title. An alphabetical list of contents appears at the start of each chapter. Each chapter includes treatment summaries, drug-class monographs and drug monographs.

There are three types of treatment summaries:
- A comparison of a group or between groups of drugs.
- An overview of how drugs are delivered to a specific body system.
- The drug management or prophylaxis of common conditions.

Drug-class monographs are organised alphabetically by their classification, with drug monographs listed alphabetically within each classification (BNF 2015, 2016).

**Drug-class monographs and drug monographs**
Drugs are listed primarily by their international non-proprietary (generic) name. In the absence of an international non-proprietary name, drugs are listed by their British approved name as listed in British Pharmacopoeia (2016). Each drug monograph contains the systemic indications of that particular drug; however, separate monographs may exist for topical and local uses. This differs from previous editions of the BNF, where drug information was frequently listed in different chapters depending on the indications for its use. Each drug monograph may include over 20 different sections; however, each section is only included when relevant to that particular drug.
TIME OUT 2
List three drugs that are used regularly in your clinical practice. Compare and contrast the sections detailed in the monographs for each of your chosen drugs. Make notes on how they differ.

Indications and dose
The section ‘Indications and dose’ outlines the clinical circumstances or conditions for which the drug is used. It includes the drugs licensed and unlicensed use and its appropriate total daily dose, for example 6g (2g three times daily) or definite dose frequency, for example 3g daily in three divided doses.

TIME OUT 3
Identify the indications for use and the initial daily dose of the drug felodipine for an older person. How does the initial daily dose compare to that recommended for a younger adult? You might like to check your answer with a pharmacist or another member of staff.

Doses for specific patient groups, for example older people, may also be included in this section. A reduced dose of a drug is often required for an older person, because of the body’s altered ability to handle a medicine resulting from the ageing process (Davies and Nuttall 2016).

Unlicensed use
Further information regarding a drug’s unlicensed use is provided in a new section that appears directly beneath ‘Indications and dose’. This information refers to the drug’s ‘off license’ or ‘off label’ use, for uses not included in the manufacturer’s marketing authorisation from the MHRA.

TIME OUT 4
Determine the licensed and unlicensed indications for the drug metformin.

Important safety information
Safety information can be found under the ‘Indications and dose’ or ‘Unlicensed use’ (if present) sections in a box outlined in colour. The colour used varies between editions, but is consistent within each edition, for example the outlines were green in BNF 70 and blue in BNF 71. It details concerns raised by the regulatory authorities or guideline developers about the safety of a drug and any warnings issued by the Commission on Human Medicines or the MHRA.

TIME OUT 5
Make notes on the important safety information for the drug metoclopramide hydrochloride.

Contraindications
Contraindications are circumstances or conditions when a drug should be avoided. A thorough assessment of the patient’s medical and medicines history is essential to ensure drugs are not inadvertently prescribed or administered in situations where they are contraindicated (Petty 2012).

Cautions
In contrast to contraindications, cautions detail circumstances where a drug should be used with care, for example if the patient has a listed comorbidity – there is a caution for the use of aspirin in people with asthma. When prescribing a drug where a caution exists, the potential for causing harm should be considered carefully (Beauchamp and Childress 2013).

TIME OUT 6
List the interactions for the drug warfarin. What is the significance of the black dot symbol that appears next to warfarin’s interaction with St John’s Wort?

Interactions
There is potential for drugs to interact when two or more drugs are given simultaneously. Interactions can reduce the efficacy or increase the toxicity of a drug or drugs (Kaufman 2014). Interactions appear as a section heading in the drug-class monograph and/or the drug monograph and refer the healthcare professional to Appendix 1 of the BNF (2016), a comprehensive alphabetised list of drugs and their interactions with other drugs, herbal remedies and food substances. Potentially serious interactions where concomitant administration should be avoided are indicated by the presence of a black dot. When a drug monograph has a
corresponding drug-class monograph, the two should be considered in conjunction. A coloured flag indicates that a drug monograph has a corresponding drug-class monograph. A white flag in a coloured circle denotes that the information provided concerns a drug class.

**Side effects**
Side effects of drugs or groups of drugs are listed in order of frequency of occurrence in the revised format of the BNF; from very common to very rare. Each category, is organised alphabetically. Categories may include a further subdivision, ‘Side effects, further information’, if there are particular side effects associated with differing routes of administration of the drug, for example, verapamil hydrochloride, or where further information is known about the side effects of the drug, for example, hydralazine hydrochloride. The ‘Allergy and cross-sensitivity’ section contains information regarding hypersensitivity reactions, for example, carbamazepine.

All healthcare professionals involved in prescribing, dispensing, administration, and monitoring of medicines should be vigilant and mindful that any drug can cause side effects. Unwanted or undesirable side effects, referred to as adverse drug reactions, may require reporting to the MHRA using their Yellow Card Scheme (Greener 2014). Serious adverse drug reactions to established medicines, and adverse drug reactions in children and adults over 65 years should always be reported. Some medicines are subject to additional monitoring by the MHRA. They are identified in the BNF using an inverted black triangle. All suspected adverse drug reactions for these medicines must be reported. Additional information and copies of the Yellow Card can be found in the last section of the BNF or on the MHRA website (MHRA 2015).

**Hepatic and renal impairment**
Separate sections in the individual drug and drug-class monographs in the BNF identify prescribing considerations for patients with hepatic impairment and renal impairment. These sections identify drug dose adjustments and monitoring requirements in patients when a drug’s effect is altered by hepatic or renal insufficiency. Appropriate drug selection and prescribing can minimise the potential for accumulation of a drug, side effects and exacerbation of hepatic or renal impairment (BNF 2015, 2016).

**Pregnancy and breastfeeding**
Drug selection in pregnancy and breastfeeding should aim to minimise any potential side effects for the unborn child or infant. Separate sections in the drug and drug-class monographs provide information about the use of specific drugs during pregnancy and breastfeeding. Further information on prescribing considerations in pregnancy and breastfeeding is located in the first section of the BNF.

**Conception and contraception**
‘Conception and contraception’ is a new section heading in the drug and drug-class monographs that provides information regarding prescribing considerations for women of childbearing age or men who may wish to father a child. This information was previously listed in the ‘cautions’ section.

**Monitoring**
‘Monitoring’ is a new section heading that may be included in the individual drug and/or drug-class monographs. It is important to remember this information may be included in either location to avoid placing a patient at potential risk of harm, by overlooking essential monitoring requirements. Healthcare professionals are alerted to monitoring requirements by the use of flags in the revised format of the BNF. A coloured flag indicates that a drug monograph has a corresponding drug-class monograph. A white flag in a coloured circle denotes that the information provided concerns a drug class. When a drug monograph has a corresponding drug-class monograph, the two should be considered in conjunction.

**Effect on laboratory tests**
The monitoring requirements of a drug may vary depending on its indications for use. The drug taken may also directly affect laboratory test results. It is important to consider the
potential for drug-related alteration of results, when monitoring drug therapy. Therefore, a new section, ‘Effect on laboratory tests’ has been included in the BNF.

**Treatment cessation**
Some drugs also require monitoring as they are withdrawn, for example, selective serotonin re-uptake inhibitors. This information is detailed in the ‘Treatment cessation’ section.

**Pre-treatment screening**
Conversely, some drugs require pre-treatment screening, for example, methotrexate. This information is included in the drug monograph in the ‘Pre-treatment screening’ section, detailing the one-off tests required to determine an individual’s suitability for a drug.

**Directions for administration**
Once it has been determined that a drug is suitable for administration, the appropriate route of administration should be determined. An additional section, ‘Directions for administration’, has been included in the BNF to enable this decision, for example, cefuroxime.

**TIME OUT 7**
Determine which monitoring requirements are recommended for the antipsychotics drug class. Does olanzapine have any additional monitoring requirements?

**National funding/access decisions**
It is imperative that drug selection is determined in conjunction with the best available evidence, clinical experience, and consideration for an individual’s beliefs, values and preferences (NICE 2015). The section ‘National funding/access decisions’ details NICE and Scottish Medicines Consortium guidance to assist evidence-based prescribing. However, comprehensive details of the guidance and subsequent updates should be accessed through the NICE (www.nice.org.uk) and Scottish Medicines Consortium (www.scottishmedicines.org.uk) websites.

**Less suitable for prescribing**
The drug monograph also identifies when drugs are considered by the Joint Formulary Committee to be less suitable for prescribing.

**Medicinal forms**
The ‘Medicinal forms’ section is always located at the end of the drug monograph. It contains information regarding the types of formulation available, for example tablet, the strength of the drug, branded preparations, cost and legal status.

The following abbreviations may be used:
- PoM: prescription-only medicine, including controlled drug schedules.
- P: pharmacy-only medicine.
- GSL: general sales list.

Information regarding electrolytes and excipients (additional ingredients contained in the dose form other than the active drug) is also included in the medicinal forms section. Numbers following the medicinal form entries correspond to the cautionary and advisory labels that pharmacists are recommended to add when dispensing these drugs.

**Exceptions to legal category**
Any exceptions to legal category status are detailed in a separate section (BNF 2015, 2016). This details when the medicine is exempt from prescription only control, for example, ibuprofen gel.

**TIME OUT 8**
Review the ‘Exceptions to legal category’ section for the drug paracetamol. Identify the maximum number of capsules or tablets that can be sold to an individual by a pharmacist.

**TIME OUT 9**
Look up the drug monograph for metronidazole tablets. Identify the cautionary and advisory label numbers. What do these numbers refer to? (See Appendix 3 in the BNF.)

**Prescribing and dispensing information**
Additional prescribing information is listed in the ‘prescribing and dispensing information’ section, for example, abacavir.

**Patient and carer advice**
Some drugs also require specific directions or counselling on their use. This information is included in the monograph in ‘Patient and carer advice’
and provides invaluable information for healthcare professionals involved in the administration and dispensing of drugs.

**Conclusion**

Nursing students, nurses and other healthcare professionals involved in prescribing, dispensing, administration and monitoring of medicines must be able to use the BNF effectively and ensure they remain up to date with changes in the BNF that are relevant to and may affect their practice. The BNF provides a comprehensive and authoritative source of information for healthcare professionals to ensure that medicines use is optimised, therapeutic effects are maximised and the potential for patients to experience adverse drug reactions or drug interactions is minimised.

**TIME OUT 10**

Now that you have completed the article, you might like to write a reflective account as part of your revalidation.

**References**


**Call for papers**

Nursing Standard is welcoming CPD article submissions from experienced or new authors on a variety of subjects, including:

- Continence
- Communication
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Contact the Evidence & Practice editor Gwen Clarke at gwen.clarke@rcni.com
Using the British National Formulary (BNF)

TEST YOUR KNOWLEDGE BY COMPLETING SELF-ASSESSMENT QUESTIONNAIRE 862

1. Information in the British National Formulary (BNF) is:
   a) Informed by a network of clinical experts
   b) Authenticated against emerging evidence
   c) Independent of the pharmaceutical industry
   d) All of the above

2. Information in the BNF is not locatable by:
   a) Therapeutic contraindications
   b) Body system
   c) Drug class
   d) Drug name

3. The 16 chapters comprising Section 2: Notes on drugs and preparations are organised by:
   a) Body system
   b) Body system or aspect of medical care (for example, infection)
   c) Aspects of medical care (for example, infection)
   d) Drug class

4. Which is not a type of treatment summary?
   a) A comparison of a group or between groups of drugs
   b) The drug management or prophylaxis of common conditions
   c) An overview of how drugs are delivered to a specific body system
   d) The drug management or prophylaxis of rare conditions

5. Drugs are listed primarily by their:
   a) International non-proprietary (generic) name
   b) Brand name
   c) British approved name
   d) International proprietary name

6. Within each monograph, side effects are listed:
   a) Alphabetically
   b) From most common to least common
   c) From least common to most common
   d) From most serious to least serious

7. In Appendix 1: Interactions, potentially serious interactions are indicated by:
   a) A red dot
   b) A red flag
   c) A black dot
   d) A black flag

8. How are medications identified that are subject to further monitoring for adverse reactions by the Medicines and Healthcare products Agency (MHRA), and for which any suspected adverse events must be reported?
   a) With a coloured flag
   b) With a black square
   c) With a black triangle
   d) With an inverted black triangle

9. A solid coloured flag by the drug name indicates:
   a) That a drug monograph has a corresponding drug class monograph
   b) That the information provided concerns a drug class
   c) There are pre-treatment and treatment-cessation requirements
   d) The drug may influence laboratory test results

10. Medicines detailed in the ‘exemption to legal category’ are:
    a) Available on prescription only
    b) Exempt from prescription-only controls
    c) Not legally available
    d) Can be sold to the public with no restrictions on quantity

How to complete this assessment

This self-assessment questionnaire will help you to test your knowledge. It comprises ten multiple choice questions that are broadly linked to the article starting on page 54. There is one correct answer to each question.

You can test your subject knowledge by attempting the questions before reading the article, and then go back over them to see if you would answer any differently.

You might like to read the article before trying the questions. The correct answers will be published in Nursing Standard on 13 July.

Subscribers making use of their RCNi Portfolio can complete this and other questionnaires online and save the result automatically.

Alternatively, you can cut out this page and add it to your professional portfolio. Don’t forget to record the amount of time taken to complete it.

You may want to write a reflective account based on what you have learned.

Visit journals.rcni.com/r/reflective-account

Answers to SAQ 860 on Identifying residents at risk of care complications in care homes, which appeared in the 7 September issue, are:

1. d 2. b 3. a 4. b 5. c 6. c 7. b 8. d 9. c 10. b

This self-assessment questionnaire was compiled by Beth Knight

The answers to this questionnaire will be published on 5 October