The British National Formulary: past, present and future

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Since it was first published in 1949, the British National Formulary (BNF) has been the lead authority on the selection and use of medicines for health professionals in the UK. Here, Joy Ogden discusses how the BNF has evolved, from its first inception to the modern age of digital publishing.

Many have said of alchemy, that it is for the making of gold and silver. For me such is not the aim, but to consider only what virtue and power may lie in medicines.” Paracelsus (1493–1541).

Paracelsus, Swiss physician and alchemist, was reportedly one of the most influential medical scientists in early modern Europe but he was by no means the first. If you Google “history of pharmacy”, you will find many references to its ancient origins, including those to cuneiform tablets recording prescribed medications from around 2000 to 1500 BC and further back to Sumerian times.

Pharmacy is truly an ancient art and science and its development has taken many centuries, during which time drugs were being dispensed by doctors or pharmacies and apothecaries with no reliable way of ensuring quality or dosage, making it very risky for patients.

Since then, pharmacists’ practices have changed beyond recognition. Figure 1 depicts the BNF now adapted to the digital age – but in the early 20th century, the pharmacist’s job mainly involved making their own stock medicines, pills and potions (with the help of recently-developed hefty pharmacopoeias) and advising on drugs.

Doctors, too, have confronted challenges in a changing world. In the first half of the 20th century – faced with prescribing appropriate, effective medications from an increasingly complex range of drugs produced by an expanded and influential pharmaceutical industry – that doctors realised they needed independent, high-quality advice.

In 1941, the National War Formulary (NWF) was established to provide a list of selected and trusted products to respond to an urgent need for strict economy in prescribing during the Second World War,
together with a “select range of medications sufficient in range to meet the ordinary requirements of therapeutics for doctors in the community and in hospital.”

Founding of the BNF
Following the end of the war and the founding of the NHS in 1948, the British Medical Association (BMA) and the Royal Pharmaceutical Society (RPS) wanted to continue publication of a formulary for general use and the British National Formulary (BNF) arrived on the scene in 1949.

The first BNF series was updated every three years until 1976, when the rapid appearance of new drugs rendered it quickly out of date. The Department of Health and Social Security (DHSS, now the Department of Health) negotiated with the British Medical Association (BMA) and the Royal Pharmaceutical Society (RPS) to produce a new-look BNF, and it was agreed that an updated edition would be published every six months, which the DHSS would distribute free of charge to all doctors and pharmacists. Negotiations with the BMA led to a promise to allow doctors freedom to prescribe drugs not included in the BNF, which continues today.

The new BNF was launched in 1981 and included drug monographs for all licensed medicines, as well as a few that were not licensed. According to a member of the Joint Formulary Committee involved in its production, its initial reception by “the media and the pharmaceutical industry was hostile and unpleasant”; very different to the reaction of “doctors and pharmacists... [who] found it useful and were pleased with it.” However, writing in 2006, one critic said that this early edition did little to identify the best treatments or the cost-effectiveness of choices.

By the early 1990s, it became obvious that local NHS managers needed help in deciding which drugs to include in their local formularies, and finding ways to encompass both cost-effectiveness and the inclusion of new treatments within the limits of NHS funding.

In 1999, the National Institute for Clinical Excellence (NICE, now the National Institute for Health and Care Excellence) came on the scene with its original brief to reduce the “postcode lottery” of NHS treatments and care and to create consistent clinical guidelines. NICE has now taken over the responsibility of purchasing print editions of the BNF for distribution to NHS health professionals in England (one issue annually) and its guidance is included within the BNF.

What does the BNF now provide and how is it created?
The BNF provides validated information on drugs and their indications, dosages, contraindications, side-effects, interactions and pricing, as well as consensus guidelines and evidence-based advice from a wide range of information sources (see Table 1). Figure 2 shows the journey of new BNF content from source to publication. Hundreds of changes are made between print editions and published monthly online, with the most clinically significant changes listed separately.

The Joint Formulary Committee (JFC), which is responsible for signing off the BNF’s content, oversees policy matters and reviews BNF amendments in the light of new evidence and expert advice. It includes doctors appointed by the British Medical Journal (BMJ) Group, pharmacists appointed by the RPS and representatives from the Medicines and Healthcare products Regulatory Agency (MHRA) and the Department of Health.

The BNF editorial team’s clinical writers have all worked as pharmacists, are employees of the RPS and have a sound understanding of drug use in clinical practice. Each is responsible for editing, maintaining and updating content. Draft amendments are referred to a pool of expert advisers and clinical specialists where their particular expertise is required. The text is then presented to members of the JFC, who give it the final approval. Depending on the content’s impact on practice, it will then be shared with a peer review group, publicly on the BNF website, or sent to a separate set of professionals for comment.

In 2005, the BNF team combined forces with Medicines for Children to launch their British National Formulary for Children (BNFC), in recognition that babies and children were at risk from doctors prescribing drugs not licensed for use in children or the use of off-label medicines. A new print edition of BNFC is now published annually.

The BNF is also used as the basis of national formularies in countries other than the UK, where for many (including in some European, African and Commonwealth nations) it is a well-used, highly regarded resource. The BNF says that, via both the BMJ and the RPS, it is exploring relationships—some at a national level—to make access easier in other countries at the point of care.

In 2013, NICE praised the BNF’s success in “addressing high-level questions of drug safety, effectiveness, appropriateness, dosage and adverse effects for all medications covered,” and for their clear presentation of advice and the variety of support tools to aid their implementation. However, NICE expressed concerns about “the lack of stakeholder involvement... [and] evidence of a process for systematically assessing the strengths, weaknesses and areas of uncertainty in the evidence, or an external peer review.”

In 2014, following public consultation, NICE’s Accreditation Advisory Committee decided that accreditation could not be granted for the processes used to produce the BNF and the BNFC because more work needed to be done on appraising the strength of evidence, increasing stakeholder involvement and improving the peer review process. However, following a reworking of the processes and a resubmission of the BNF’s application, NICE accredited the editorial processes used to produce the BNF and the BNFC publications from September 2016 to September 2021.

Table 1. BNF sources of information

- Summaries of product characteristics
- Consensus guidelines from NICE, the Scottish Medicines Consortium (SMC) and the Scottish Intercollegiate Guidelines Network (SIGN)
- Systematic reviews databases, including the Cochrane Library
- Medical and pharmaceutical research papers and reviews
- Expert advisers
- References sources, such as Martindale: The Complete Drug Reference
- Statutory information, eg Home Office controlled drug regulations, MHRA, Drug Tariff
- Pricing information provided by NHS Prescription Services
Is the *BNF* still meeting prescribers’ needs?

One of the most important roles of the *BNF* is to sift through the vast quantities of data on medicines emanating from clinical researchers, pharmaceutical companies, regulators and professional bodies every day and provide evidence-based guidance to best practice in an accessible format.

The last time the *BNF* commissioned independent market research to check its performance on meeting these aims was conducted by Kantar Health in 2010. The survey, which included doctors, nurses and pharmacists in primary care and acute care, revealed that 100% of health professionals working with medicines used the *BNF*. Asked about their use of the *BNF*’s various formats, including digital devices and computers, most respondents (68%) said they used the print publication daily, whereas only 14% used the *BNF* online every day. Only 61% of healthcare professionals had ever used the *BNF* in its digital form, despite its free availability for many years on the internet. The print and digital formats were also used in different contexts: most people preferred to use the book to aid decisions, typically about doses at the point of care, whereas the *BNF* in digital form was most often used for review, education and continuing professional development (CPD).

The *BNF* decided to tackle the growing volume of information by facilitating digital access to the print versions of *BNF* and *BNFC* – online via desktop computers and laptops and via an app for mobile phones and tablets (see Figure 1) – and in November 2015, the *BNF* was re-structured (see Table 2). The electronic *BNF* and *BNFC* are now updated online monthly, via MedicinesComplete (www.medicinescomplete.com) and the NICE Evidence Search portal (www.evidence.nhs.uk) but there are aspirations to make that even more frequent.

*BNF* director Karen Baxter says the change was being partly driven by the NHS’s pursuit of a digital agenda in an attempt to go paper free, but also by the need to change the *BNF*’s book-based structure, which was limiting its production in any other form. However, she emphasises that this does not spell the end of the print version. She says: “Rather than holding all our content as a print product, we now hold our content on a database, from which we can produce print, app and web material, or anything else that may crop up as being desirable – basically much more modern publishing.”

Ms Baxter adds: “We hope it will be a much more consistent experience and much easier for users to get the information they’re looking for.”

**Reaction to the revamped *BNF***

Ms Baxter says: “I think initially there was quite a degree of shock about the
change and I think that’s probably inevi-
table when you change something that’s 
very familiar and much loved. But as the 
editions have progressed, users say they 
find it easier to find information and – 
probably most satisfyingly – some people 
who hated it to begin with have emailed 
us to say, with hindsight and a bit of 
familiarity, they actually now really like it.”

Readers are invited to browse by 
alphabetically arranged drug mono-
graphs, drug interactions and treat-
ment summaries or by type (eg wound 
management, medical devices, and 
borderline substances) and to view the 
Dental Practitioners’ Formulary, Nurse 
Prescribers’ Formulary and Medicines 
Guidance.

The BNF released a new and improved 
app for the newly structured content in July 
available for both iOS and Android plat-
forms), which Ms Baxter says should make 
the user experience much better because 
the data’s structure lends itself to creating 
digital products whereas before it was wed-
ded to the print structure.

As the NHS Business Services 
Authority used the chapter structure of the 
print version of the BNF to develop its 
own system of coding drugs, it left them 
in need of a new drug coding system once 
the BNF was restructured leading to poten-
tial problems for clinics, pharmacies and 
hospitals. The BNF has retained a legacy 
chapter structure on MedicinesComplete 
support users of this system. There are 
ongoing discussions about what should 
happen across the service to replace this 
system, says Ms Baxter.

What will happen with medicines 
information in the future? Ms Baxter 
replies: “I think, as you’d probably expect, 
it’s a move to providing information more 
in line with the clinician’s workflow. 
Rather than having to stop what they’re 
doing to look something up, information 
will be provided at the point they need it.

“It works to some extent at the 
moment with clinical decision support 
but I think there will be future moves 
to make this much more refined and 
patient-centric.”

What do BNF users think?
Wendy Preston, head of nursing at the 
Royal College of Nursing, is appreciative 
of the help provided by the BNF. She 
says: “The BNF’s Nurse Prescribers’ 
Formulary, and the introduction of online 
access and an app, has been well-re-
ceived by nurses, particularly advanced 
practitioners.

“To ensure evidence-based prescrib-
ing, it is essential that information is 
available in all clinical settings, and digi-
tal formats are often easier to use than 
traditional paper copies. However, we 
must remember that not all nurses will 
have access to these systems, and some 
will still require a hard copy.”

Dr Mark Temple is a general physi-
cian and renal consultant physician in 
Birmingham and a future hospital officer, 
looking at future systems of care, mainly 
for acute medical patients, at the Royal 
College of Physicians (RCP). He, too, is 
grateful for the BNF. He says it was the 
go-to reference in book form when he 
qualified in 1982 and all that new doc-
tors had to guide them through prescrib-
ing. He adds: “We all wore white coats in 
those days and in one pocket you’d have 
your stethoscope and usually something 
like a tourniquet for taking blood – and 
the other pocket was just completely 
taken up by the BNF... it was an essential 
tool of the trade really.”

Now a renal consultant, part of his 
role is advising other doctors about drug 
interactions that might be relevant, or the 
side-effects and particular sensitivities 
of renal patients to certain drugs, he says, 
and on average he uses the print form of 
the BNF once a day – the latest edition 
is in his office. Dr Temple adds that his 
most recent example of the BNF’s invalu-
able help was in a query about a very 
rare condition (familial hypokalemic peri-
odic paralysis) treated by a rarely used 
drug in a patient from outside the UK, 
diagnosed elsewhere in the UK. He says: 
“I would challenge anyone to have that 
sort of knowledge in their head, so I went 
straight to my BNF and looked up the con-
dition and the use of acetazolamide in 
it its treatment. I find it probably quicker 
to navigate using the print version of the 
BNF than online but if you’re actually pre-
scribing online then I think it’s easy to get 
access to the online BNF and have that 
and the prescribing software open at the 
same time.”
spective on prescribing, including risks and issues such as: “What medications you might seek to stop or suspend temporarily in acute kidney failure; or a listing of the top 20 interactions that are relevant to renal failure.”

Does he use the BNF to educate himself? He replies: “Yes, absolutely, very much so!” He adds: “I take the view that if you’re in medicine, you’re always learning and should always be open to learning.”

As Paracelsus said: “Thoughts create a new heaven, a new firmament, a new source of energy, from which new arts flow.”

References

Declaration of interests
None to declare

Joy Ogden is a freelance journalist