Public Health England

NPIS
National Poisons Information Service

National Poisons Information Service
Report 2017/18

The National Poisons Information Service is commissioned by Public Health England on behalf of the UK health departments

National Poisons Information Service

The main role of the National Poisons Information Service (NPIS) is to advise NHS healthcare professionals on the diagnosis, treatment and care of poisoned patients across the United Kingdom. Poisoning is an extremely common cause of hospital admissions in the NHS, being similar in number to admissions to other common medical emergencies. NPIS advice ensures that healthcare staff have access to up to date information about treating poisoned patients and that patients without significant poisoning are not treated in hospital, thus reducing unnecessary use of NHS resources. The major workload of the NPIS is to advise hospital emergency departments, but minor injuries units and primary care services are also significant users of the service - the latter to a large extent involving NHS advice services (NHS 111, NHS 24 and NHS Direct).

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Contents

National Poisons Information Service 2
Foreword 4
Executive summary 6
1. Introduction 8
2. Structure of the NPIS 10
3. NPIS activities in 2017/18 15
3.1 Overall service profile 15
3.2 TOXBASE app for iOS and Android mobile devices 21
3.3 Consultant referrals 24
3.4 NPIS Product Data Centre 28
3.5 NPIS Literature Database and Current Awareness in Clinical Toxicology 29
3.6 NPIS website 29
4. UKTIS activities in 2017/18 30
4.1 Overview of the service 30
4.2 Information provision 30
4.3 Surveillance and research 32
4.4 Education and training 32
5. Clinical governance 34
5.1 Analysis of critical events 34
5.2 Quality assurance exercises 35
5.3 Education and training 41
6. Areas of interest in 2017/18 45
6.1 Drugs of misuse 45
6.2 Pesticides 51
6.3 Carbon monoxide (CO) 53
6.4 Dinitrophenol (DNP) 54
6.5 Snake bite 56
6.6 Oral anticoagulants 58
6.7 Poisoning-related deaths 59
7. Conclusions 61
8. Recommendations 62
APPENDIX A Senior NPIS staff 64
APPENDIX B NPIS publications in 2017/18 74

Foreword

Every day in the United Kingdom, many hundreds of people seek advice from a health professional following exposure to a drug or chemical. This may happen by accident, for example accidental ingestions of potentially toxic substances, errors in the dosing of medicines or environmental or occupational exposures, but may also occur as a result of drug overdose taken in the context of self-harm or drug misuse. The numbers of substances involved are very large, so health professionals need rapid access to high quality information about the anticipated health effects of exposure to the many thousands of different substances that might be involved.

Provision of accurate and evidence-based information is the role of the National Poisons Information Service (NPIS). This is achieved via our telephone advice line, staffed by specialists in poisons information, and our internet database TOXBASE, both of which are available on a 24-hour basis for health professionals, together with a consultant clinical toxicologist for advice on serious or otherwise challenging cases.

The unborn child is particularly vulnerable to the effects of drugs and chemicals, so advice on potential adverse fetal effects of exposures during pregnancy is available from the UK Teratology Information Service (UKTIS), located in Newcastle. Information and advice about exposure to hundreds of drugs and chemicals during pregnancy are published openly on the internet, while more detailed and referenced information is available via TOXBASE to health professionals, who can also access detailed specialist advice by telephone during office hours.

The information and advice we provide supports the high quality care of patients with suspected poisoning, not only improving the care of those at risk of serious complications, but also avoiding unnecessary referrals, admissions and treatments for those who are not at risk. As a result the services provided by the NPIS are highly cost effective, as we have demonstrated previously.

The NPIS is commissioned by Public Health England on behalf of the English Department of Health and Social Care, the Scottish Government, the Welsh Government and the Northern Ireland Department of Health. The NPIS also provides services to the Republic of Ireland and these are commissioned by Beaumont Hospital, Dublin, on behalf of the Irish Government. Services are provided by four NHS hospitals located in Birmingham, Cardiff, Edinburgh and Newcastle; these work together to deliver a fully-integrated service.

This annual report is written as a statement of our activity, accountability and governance over the last year. In spite of ongoing funding pressures and consequent staff reductions, the service continues to receive outstanding user feedback, as

detailed later in this report. These growing financial pressures increasingly compromise our ability to maintain the 24-hour telephone rota and keep TOXBASE updated. It remains our highest priority to provide services of the highest possible quality within currently available resources.

Simon Thomas
Chair, NPIS Clinical Standards Group

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Centre for Radiation, Chemical and Environmental Hazards, Public Health England

Executive summary

Background

Poisoning is an important public health issue and a common cause of hospital presentation in the UK. Around 160,000 presentations occur annually as a result of poisoning, most frequently in the context of deliberate self-harm. Many more patients are managed in the community, including by primary care and NHS advice services such as NHS 111, NHS 24 and NHS Direct. The National Poisons Information Service (NPIS) is commissioned to provide information and advice 24-hours a day to NHS healthcare professionals across the UK to support the management of patients with suspected poisoning.

The NPIS provides this information primarily via TOXBASE, an online database, which is also available as an app for iOS and Android mobile devices, and a 24-hour telephone advice service, staffed by specialists in poisons information and supported by consultant clinical toxicologists. The availability of this expertise avoids unnecessary hospital referrals and admissions for patients at low risk of harm, while improving the quality of treatment and shortening hospital stay for those with clinical toxicity.

The NPIS also hosts the UK Teratology Information Service (UKTIS), the national source of information and advice about exposures to drugs and chemicals during pregnancy.

Activity

During 2017/18, there were 695,707 TOXBASE user sessions in the UK. The most frequent users were hospital departments and NHS telephone advice services such as NHS 111, NHS 24 and NHS Direct.

After recognising a need to deliver information on poisoning directly to individual healthcare professionals, the TOXBASE app was developed providing users access to TOXBASE on- and offline at the point of care. There are currently 12,015 TOXBASE app subscribers who have accessed 122,033 app pages during 2017/18, representing a 50.8% increase from 2016/17.

While use of TOXBASE online and the TOXBASE app has increased, demand on the national telephone enquiry line has fallen, with 41,931 telephone enquiries received during 2017/18. The most frequent users of this service are NHS telephone advice services and primary care professionals. The number of enquiries referred to the on-call consultant clinical toxicologist also reduced during 2017/18 with 1,907 consultant

referrals representing a 2.9% reduction compared to 2016/17.

During 2017/18 UKTIS provided information in relation to more than 2.7 million information requests. There were 541,476 accesses to scientific information on the UKTIS website during 2017/18 (representing an 80.2% increase on the previous year). In addition, patient information pages on the UKTIS public-facing website ***bumps*** were accessed by the public on 2,138,290 occasions (a 48.0% increase on 2016/17). These increases were accompanied by a 10.0% reduction in telephone enquires (1,689 calls) to the UKTIS national enquiry line.

The NPIS follows strict clinical governance processes and, as part of this, it is essential that TOXBASE entries are reviewed and edited continually and, where appropriate, new TOXBASE entries are generated. A robust editing process ensures that the advice on TOXBASE remains accurate, up to date and evidenced-based. The NPIS aims to review each of the approximately 17,000 TOXBASE entries every four years. During 2017/18 4,827 TOXBASE entries were created or updated.

Quality

Quality assurance exercises, conducted by questionnaire, continue to demonstrate very high user satisfaction with the services provided by the NPIS. The proportion of respondents scoring services as five or six out of six (very good or excellent) was 92.2% for TOXBASE online, and 98.7% for the telephone poisons information service.

Surveillance

The NPIS is uniquely placed to collect clinical information on poisoning from across the UK. This information is of great value in improving our own clinical advice for health professionals and to guide public health surveillance of poisoning. Examples of work carried out during 2017/18 are summarised within this report. This year topics selected for review include drugs of misuse, pesticides, carbon monoxide, dinitrophenol, snake bites, oral anticoagulants and poisoning-related deaths. Further details about these can be found in section six of this report.

1. Introduction

The National Poisons Information Service (NPIS) is a network of dedicated poisons units linked to clinical treatment facilities within UK teaching hospitals commissioned by Public Health England (PHE) on behalf of the UK health departments. The NPIS has provided information to healthcare professionals in the UK by telephone since 1963. The poisons information database TOXBASE®[1] (www.toxbase.org) was developed in 1982 and has become the first-line poisons information source for healthcare professionals in the UK. While the structure of the NPIS has changed over the years, its focus has always been to assist colleagues throughout the NHS in the management of poisoned patients. The information and advice on TOXBASE is updated regularly and based on published literature, experience from NPIS telephone enquiry data, and direct clinical experience of NPIS-linked clinical departments.

The UK Teratology Information Service (UKTIS), formerly called the National Teratology Information Service (NTIS), is hosted by the NPIS. This report demonstrates the importance of UKTIS both for supporting women of child-bearing age and their healthcare providers by provision of information and advice, and also for collecting new information on the potential effects of exposure to drugs and chemicals during pregnancy, including the therapeutic use of medicines.

Poisoning is an important public health issue in the UK, accounting for around 160,000 NHS emergency department (ED) presentations each year. The majority of poisoning in adults is caused by drug overdose in the context of self-harm, while accidental poisoning is most common in children. The vast majority of UK hospitals do not have specialist clinical toxicology services, therefore 24-hour access to high quality information and clinical advice about poisoning is essential for the safe and effective management of these patients.

Many thousands of different agents may be involved, making it very difficult for NHS staff to keep up to date on diagnosis and management, especially when new or unfamiliar agents are involved. In addition, around 40% of adults who self-poison concurrently ingest alcohol which not only complicates identification of the specific poisons involved but also makes clinical assessment and management more challenging.

The NPIS supports the appropriate triage, referral, assessment and treatment of poisoned patients across the NHS. Hospital ED data, illustrated by NHS hospital episode statistics, may not provide an accurate reflection of total workload due to the

[1] TOXBASE® is a registered trademark of the UK National Poisons Information Service

challenges around accurate hospital coding. Furthermore, these data do not reflect the significant number of enquiries regarding poisoning received by primary care and NHS telephone advice services (NHS 111 in England, NHS 24 in Scotland and NHS Direct in Wales). The NPIS provides advice to EDs, GPs and NHS public access helplines to aid the decision making process as to whether patients require hospital admission, or whether they can be safely managed at home, avoiding unnecessary admissions.

A key component of the services provided by the NPIS is obtaining information from treating clinicians on the effects and outcomes of cases of severe or unusual poisoning. This information assists in providing current and accurate advice and is continually used to refresh and update the information on TOXBASE.

The NPIS is funded primarily through ‘government grant in aid’ from the UK health departments but the service also receives some contract income for providing services in other territories, as well as research income for specific projects. Overall funding for the service has reduced in real terms in recent years. As a consequence, there has been a reduction in the number of staff employed for NPIS work by the four contributing NHS organisations. This makes it increasingly challenging to provide a high quality service that can respond rapidly to the needs of the NHS.

2. Structure of the NPIS

The NPIS provides a 24-hour, 365 days a year, consultant-supported clinical toxicology advice service to assist healthcare workers in their diagnosis and management of poisoned patients, including those exposed in chemical incidents.

The four NPIS units are currently based within NHS teaching hospitals (two in England and one each in Scotland and Wales). Three of the units (Birmingham, Cardiff and Newcastle) respond to telephone enquiries 24-hours a day based upon a national rota; the Edinburgh unit takes telephone enquiries during the working day, as its focus is on editing and production of the TOXBASE database.

The four units also take telephone calls about chemical incidents and liaise with the Centre for Radiation, Chemical and Environmental Hazards (CRCE) of Public Health England (PHE) regarding management of chemical incidents.

Reductions in funding in real terms have resulted in fewer specialists in poisons information being employed for NPIS work. This creates pressure on rotas, reduces the numbers of telephone lines open and reduces the capacity of the service for other work, including the maintenance of the TOXBASE database.

The service has 24-hour consultant clinical toxicologist support available to advise on the management of more seriously unwell patients. This is provided by NHS consultant staff in all four NPIS units and in addition colleagues from two other NHS Trusts (Guy's and St Thomas' NHS Foundation Trust and York Hospitals NHS Foundation Trust). These NPIS consultant clinical staff also provide specialist services in clinical toxicology in their own hospitals. The availability of this expertise is important for UK resilience. Because the NPIS receives many enquiries about children and from emergency departments, PHE has commissioned support from consultants in paediatrics and emergency medicine.

The primary source of information provided by the NPIS is its online database, TOXBASE (www.toxbase.org), which is available, without charge, to all UK NHS healthcare units that register for it, including hospital departments, primary care practices and NHS advice services – NHS 111, NHS 24 and NHS Direct. Ensuring that the information and management advice provided by TOXBASE is current and evidence-based is of paramount importance for patient safety and maintaining the confidence of healthcare professionals.

It is essential that the great majority of enquiries are made via TOXBASE as the NPIS does not have the capacity to absorb the substantial increase in telephone enquiries that would result from TOXBASE information becoming unavailable or outdated.

The TOXBASE app for iOS and Android mobile devices is also available without charge to UK NHS healthcare professionals and has the advantage of being available on personal mobile devices both online and offline. TOXBASE is written to provide the majority of information required for the safe management of poisoned patients. However, it cannot provide all the answers for individual patients or complex cases and healthcare workers are encouraged to discuss more complex cases with the NPIS.

To this end, the NPIS provides a 24-hour telephone information service for healthcare professionals using a single national telephone number (0344 892 0111) for when such further advice or information is needed (see Box 2.1). NPIS activity is reflected in TOXBASE user session data and accesses to individual entries, telephone enquiry numbers and consultant referrals.

When first received (Figure 2.1), telephone enquiries are managed by specialists in poisons information (SPIs). SPIs may have a scientific, nursing or pharmacy background, are qualified to at least degree level and usually also hold postgraduate qualifications in toxicology. In determining the severity of each clinical case, the SPIs use the WHO/IPCS/EC/EAPCCT poisoning severity score (PSS)[2] to determine the severity of each case, with a PSS score of one being minor, two moderate, and three severe. Enquiries about complex or severe cases are referred on to NPIS consultant staff on a 24-hour basis.

Audio recordings of all NPIS telephone enquiries are retained for governance purposes and clinical data are logged within a specially designed national database, the UK Poisons Information Database (UKPID). Data are uploaded to a central server, allowing access by other NPIS units that may be involved in managing a particular patient. This also allows easy collation of activity data and surveillance of the patterns of enquiries received. UKPID holds details of all telephone enquiries made since 2007, making it an invaluable resource for studying the patterns and clinical features of different types of poisoning in the UK.

This clinical information can help the treatment of subsequent similar cases. Data from UKPID can be used for studying the epidemiology of poisoning as reported to the NPIS and its value is currently being assessed by the Medicines and Healthcare products Regulatory Agency (MHRA) to establish its value for monitoring the safety in overdose of licensed pharmaceuticals.

[2] Persson HE, Sjöberg GK, Haines JA, Pronczuk de Garbino J. Poisoning severity score. Grading of acute poisoning. Clin Toxicol 1998; 36: 205-13.

In Northern Ireland, the Regional Medicines and Poison Information Service in Belfast provides a poisons information service during working hours, but out-of-hours enquiries from healthcare professionals are referred to the NPIS. The NPIS is also contracted to provide poisons information for users in the Republic of Ireland through the provision of TOXBASE to major hospital emergency departments and to the National Poisons Information Centre (NPIC) in Dublin. NPIS also provides direct out-of-hours telephone support to health professionals and the general public in Ireland.

Box 2.1 Cloud telephone system

Since June 2012, enquiries to the NPIS have been delivered by the BT Cloud telephone system, ensuring that enquiries are routed to appropriately skilled NPIS staff members who are logged into the system, irrespective of location. The system has been designed to accommodate all services provided by the NPIS (i.e. poisons, teratology and chemicals) and has improved functionality with increased resilience and more efficient cooperative working between the UK NPIS units. Enquiries can be transferred, conference calls established and real-time reporting facilities made available. NPIS SPIs and consultants can also log in remotely, allowing rapid upscaling of telephone staffing if this is needed.

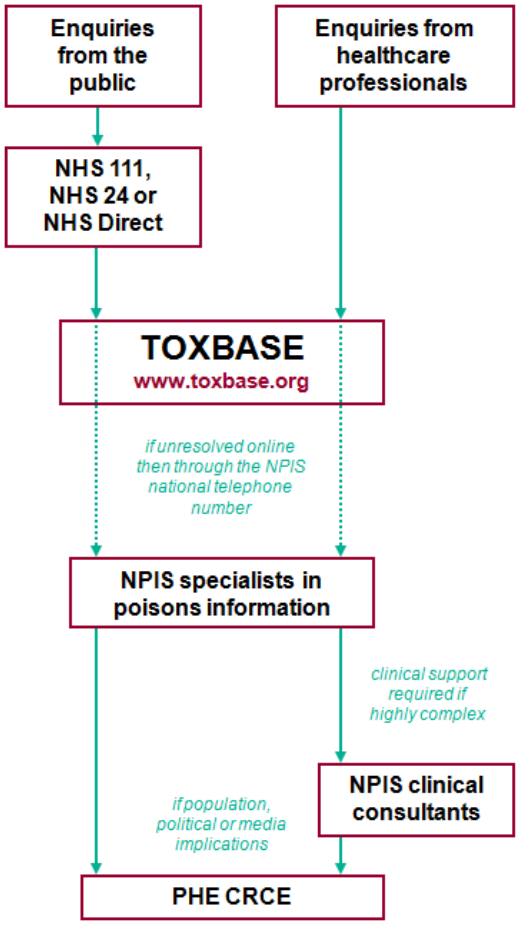


Figure 2.1 How poisons enquiries are answered

Information on the potential toxicity to the unborn child from maternal exposure to drugs and chemicals in pregnancy is provided by UKTIS. Information is provided for healthcare professionals by telephone, TOXBASE and the UKTIS website (www.UKTIS.org), while public advice leaflets are held on the ***bumps*** website (www.medicinesinpregnancy.org).

The NPIS maintains a consistent approach, irrespective of the NPIS unit answering an enquiry, through a formal UK-wide strategic framework for training and governance, agreeing clinical advice and supporting the management of the service. Operating procedures are updated regularly and made available to NPIS staff on TOXBASE.

Commissioning issues are dealt with by the PHE NPIS Commissioning Group, which meets quarterly. Clinical issues, including clinical governance, are discussed by the NPIS Clinical Standards Group, which also meets quarterly. These meetings are attended by a representative of the commissioner, a senior clinician from each of the four units and senior specialists in poisons information from the service. Invitations are also sent to representatives of the NPIC in Dublin. Other senior NPIS staff are invited to attend as observers on a rotational basis.

To ensure a common and evidence-based approach to the clinical management of poisoning, all NPIS clinical and information staff are invited to attend continuing professional development (CPD) meetings. These educational meetings provide an opportunity for clinicians and SPIs to present updates on current topics, research and audit projects, and to discuss complex clinical cases and governance issues. These two-day events occur twice a year and are hosted by all NPIS units in turn. Clinicians and SPIs are also encouraged to attend and present at international toxicology conferences such as the annual congress of the European Association of Poisons Centres and Clinical Toxicologists (EAPCCT).

There are regular teleconferences of the TOXBASE Editing Group to ensure consistent and nationally agreed database content (see Box 2.2). The NPIC in Dublin and the Northern Ireland Regional Medicines and Poison Information Service also contribute to TOXBASE development and review. The UKPID User Group meets regularly to discuss issues relating to this IT platform.

Cost benefit of NPIS

Commissioning the NPIS uses significant resource and so it is important to assess whether these costs can be justified through benefits provided by the service, such as avoidance of unnecessary hospital referrals and admissions, reduced lengths of stay, and improvements in the quality of treatment for those patients admitted. Research demonstrating the cost-effectiveness of the service as a result of avoided emergency

department referrals was described in last year's annual report and has now been fully published in the peer-reviewed literature.[3]

Box 2.2 TOXBASE editing

TOXBASE is produced and maintained by the NPIS within an audit framework of user feedback and clinical governance. TOXBASE has seen continued growth in usage since its internet launch in 1999 and deals with over 90% of all enquiries to the NPIS from the UK (the total for 2017/18 approaching 700,000). Since 1999, UK health policy has been that TOXBASE should be the first (and often only) point of information for poisons enquiries. It is therefore essential that the information it contains is kept relevant and up to date. This creates a substantial ongoing workload that is shared by the NPIS units and lead by Edinburgh. Revising TOXBASE entries is a complex process involving a comprehensive literature search together with analysis of information from case-based experience to develop the clinical advice.

All TOXBASE entries are peer reviewed before publication and key updates (e.g. highly toxic agents, standardised recommendations or commonly accessed agents) are agreed by the national TOXBASE editing committee prior to publication. The NPIS TOXBASE Editing Group includes representatives of clinical and information staff from all four NPIS units, representatives from related poisons centres and a public health physician or scientist from the PHE Centre for Radiation, Chemical and Environmental Hazards. The committee convenes four times a year by web/teleconference to agree policy for TOXBASE development, discuss the format of TOXBASE entries and agree and prioritise work programmes. Areas of clinical controversy or uncertainty are discussed at the TOXBASE Editing Group and/or by the NPIS Directors at the quarterly NPIS Clinical Standards Group meetings, as appropriate.

The NPIS aims to review each of the approximately 17,000 entries on TOXBASE at least every four years, requiring the review of over 4,000 entries in a typical year. During 2017/18, 4,827 entries were added or edited.

An important component in the review process of TOXBASE entries is user feedback from TOXBASE quality assurance forms (see Section 5.2), questionnaires on TOXBASE for new and unusual products, responses to follow-up on cases of interest, or informal feedback by email, letter or telephone. Users may also raise queries on existing entries or provide additional clinical data. Any issues specific to entries are dealt with as they arise or discussed at the TOXBASE Editing Group and/or NPIS Clinical Standards Group meetings.

[3] Elamin MEMO, James DA, Holmes P, Jackson G, Thompson JP, Sandilands EA, et al. Reductions in emergency department referrals from primary care after use of the UK National Poisons Information Service. Clin Toxicol 2017; 55: 481-2.

3. NPIS activities in 2017/18

3.1 Overall service profile

There are currently 6,551 registered departmental users of TOXBASE online. This includes 5,619 registered UK hospital departments, GPs, ambulance services and telephone triage services. TOXBASE sessions are defined as one login by a registered user where the user may access one or more products several times. In 2017/18 there were 695,707 user sessions, an increase of 5.3% from 2016/17.

There are currently 12,015 individual TOXBASE app subscribers. During the last year, subscribers accessed 122,033 app pages, including 103,568 product pages. This rate of access represents a 50.8% increase from 2016/17 (see section 3.2 for more detailed information on TOXBASE app activity).

There were 41,931 telephone enquiries received via the national helpline number (0344 892 0111) in 2017/18, of which 1,907 were referred to a consultant clinical toxicologist, representing reductions of 5.7% and 2.9% respectively when compared with figures for 2016/17. It is important to note that there remains a subset of enquiries for which telephone access will always be required as not all enquiries can be answered by TOXBASE. Immediate 24-hour access to our specialists in poisons information and consultant toxicologists will therefore continue to be required.

Figure 3.1.1 shows the annual number of TOXBASE sessions, TOXBASE app accesses, telephone enquiries and consultant referrals from 2000 to 2017/18 and demonstrates the impact of online access to TOXBASE in maintaining telephone enquiry numbers at a level that can be managed within constrained resources.

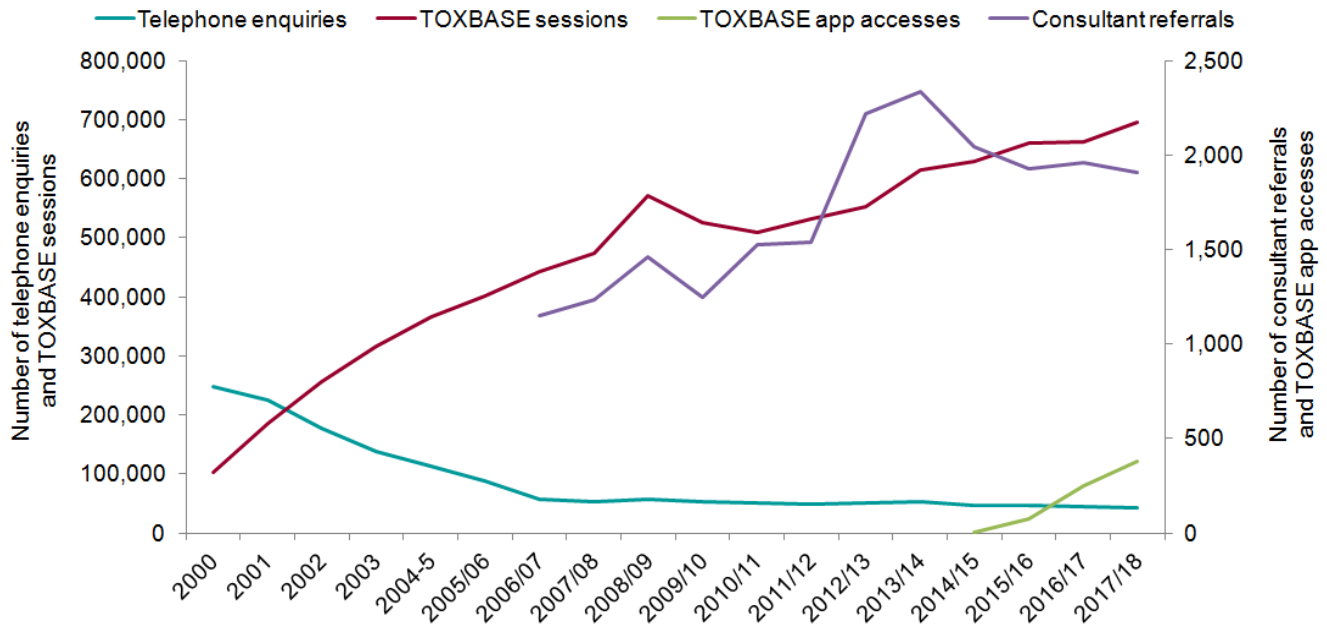


Figure 3.1.1 Annual number of TOXBASE sessions, TOXBASE app accesses, telephone enquiries and consultant referrals from 2000 to 2017/18

Not all NPIS enquiries are directly patient-related. For the purposes of this report, non-patient related telephone enquiries, and educational and international TOXBASE session activities have been excluded from further analysis. In addition, TOXBASE activity arising specifically from the four UK NPIS units, the Northern Ireland Regional Medicines and Poison Information Service, and the NPIC in Dublin, have also been excluded as this often relates to training, educational or operational procedures. This leaves a total of 628,659 TOXBASE sessions and 41,098 patient-related telephone enquiries for further analysis within this report.

Figure 3.1.2 shows the differing distributions of user types between TOXBASE sessions and telephone enquiries. Hospital users remain the most active TOXBASE users, representing 64% (402,491) of all user sessions. By contrast, national telephone triage services remain the most frequent source of telephone enquiries, representing 36% (14,941) of all those received. The number of enquiries received from telephone triage services, however, continues to decline from the peak of 17,720 in 2013/14.

TOXBASE sessions and telephone enquiries vary from month to month. Figure 3.1.3 demonstrates that session and enquiry numbers are at their highest over the summer months with a nadir during winter, an indication that seasonal trends in poisoning occur.

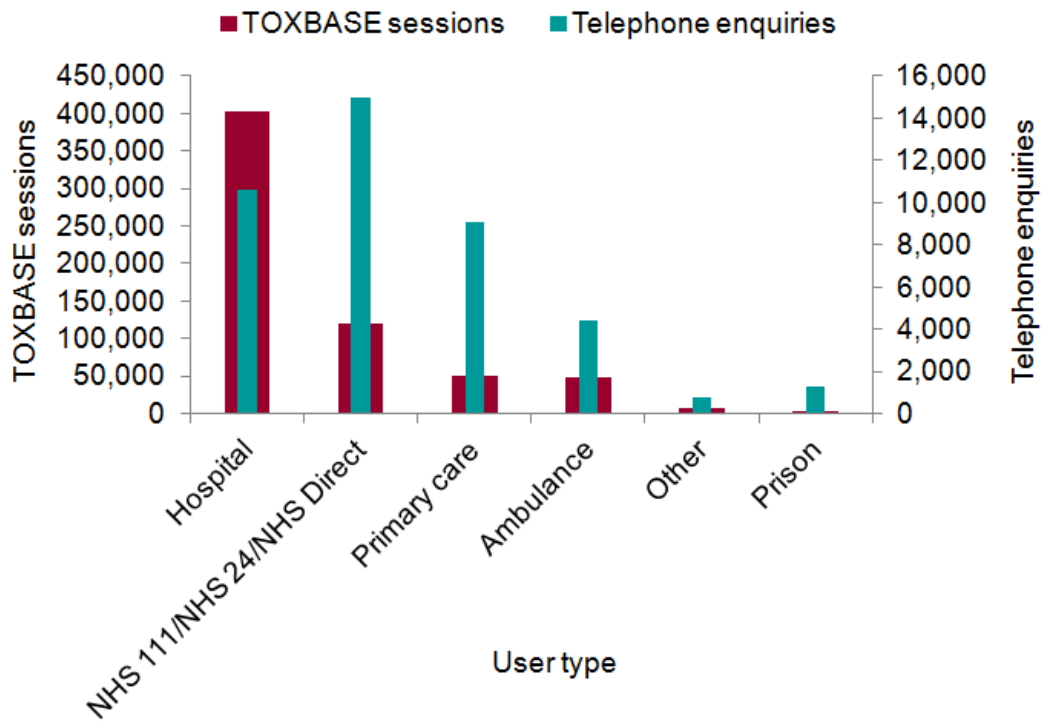


Figure 3.1.2 Total number of TOXBASE sessions and telephone enquiries received in 2017/18

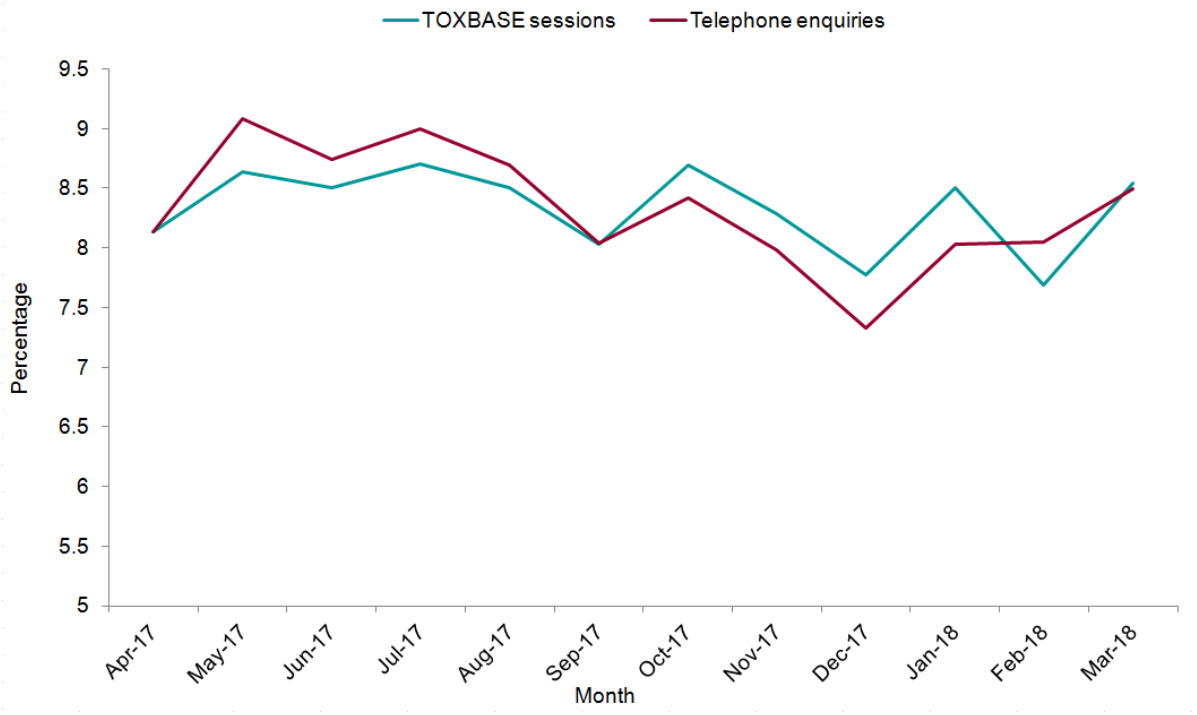


Figure 3.1.3 TOXBASE sessions and telephone enquiries received in 2017/18 by month as a percentage of the annual total

Specific product accesses from UK users increased by 2.3% from 1,651,369 in 2016/17 to 1,689,819 in 2017/18. Product access totals should not be used as a measure of the incidence of poisoning as not all relate directly to the management of individual patients, as these may be made for information purposes only or because multiple accesses may relate to a single patient.

While the number of product accesses may not truly reflect the number of poisoned patients in the UK, valuable toxico-epidemiological information can be gained from analysing the type of products accessed. Figure 3.1.4 demonstrates the different types of products users are seeking information about. Products that are most frequently enquired about include pharmaceuticals, household products and drugs of misuse. Within the pharmaceutical category itself, medications to treat pain and inflammation generate the most activity, in 2017/18 there were 167,822 product accesses to paracetamol-containing preparations and the service received 6,310 paracetamol related telephone enquiries (Table 3.1.1).

More detailed information on drugs of misuse exposures can be found in section 6.1.

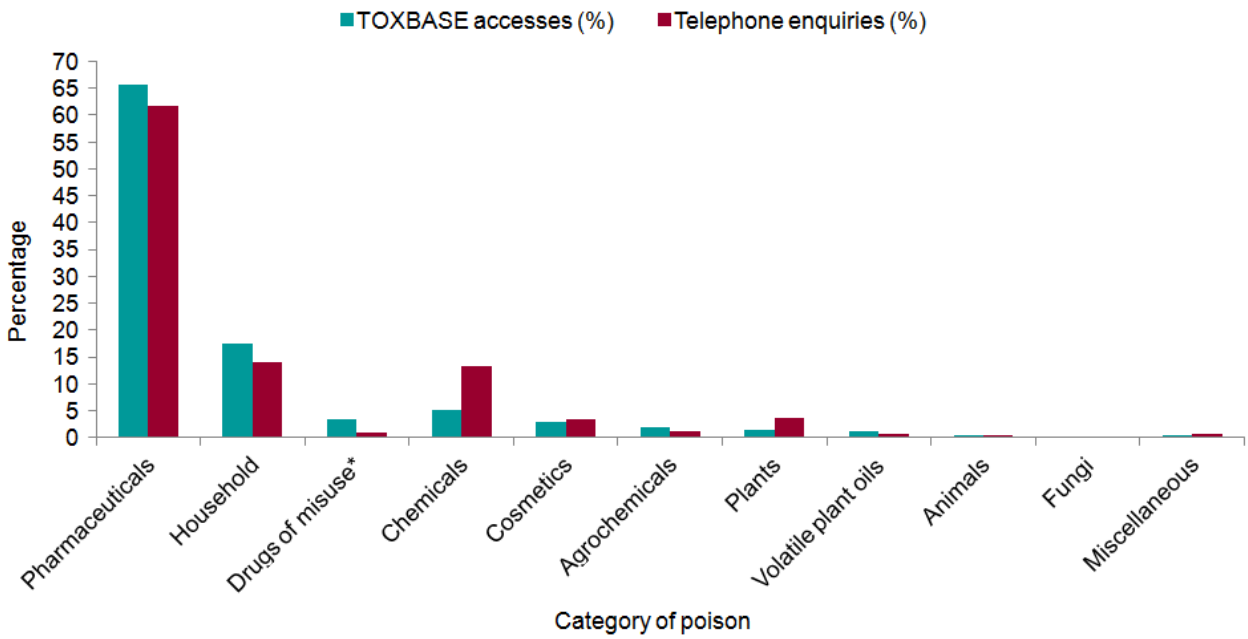


Figure 3.1.4 Categories of poisons accessed online or reported during telephone enquiries in 2017/18 as a percentage of total numbers

* total does not include product accesses for pharmaceuticals which are misused, e.g. diazepam, or fungi, e.g. *psilocybe spp*.

Table 3.1.1 Number of TOXBASE product accesses and telephone enquiries for the top 5* pharmaceutical agents used in the treatment of each of the following indications: pain and inflammation, depression, anxiety and psychoses, in 2017/18

Pharmaceuticals			
Category	**Ingredient**	**TOXBASE accesses**	**Telephone enquiries**
Pain and inflammation (227,204)	Paracetamol**	167,822	6,310
	Ibuprofen	52,315	2,157
	Codeine phosphate**	40,737	1,795
	Aspirin (acetylsalicylic acid)	13,741	502
	Naproxen	9,631	597
Depression (137,862)	Sertraline	32,776	867
	Mirtazapine	23,185	625
	Citalopram hydrobromide	20,533	552
	Amitriptyline	18,600	398
	Fluoxetine	15,962	439
Anxiety (36,126)	Diazepam	27,141	615
	Alprazolam	5,215	143
	Chlordiazepoxide hydrochloride	1,955	12
	Buspirone hydrochloride	501	14
	Valerian (dried extract)	333	15
Psychoses (49,194)	Quetiapine	22,427	574
	Olanzapine	8,732	286
	Risperidone	4,473	160
	Aripiprazole	3,921	124
	Chlorpromazine hydrochloride	1,824	42

* based on access data only.
** 14,982 product accesses and 1,347 telephone enquiries relating to co-codamol have been included into the totals for paracetamol and codeine.

In contrast to pharmaceuticals, household products may contain many ingredients, such as surfactants, essential oils or synthetic fragrances. It is therefore more important to present the type of household product generating the most activity, rather than specific ingredients. Table 3.1.2 lists the number of TOXBASE product accesses/telephone enquiries for the top 10 household product types, together with the active ingredient most likely to cause toxicity.

Table 3.1.2 Number of TOXBASE product accesses and telephone enquiries for the top 10 types of household products in 2017/18, together with the active ingredients most likely to cause toxicity

Household product type (active ingredients likely to cause toxicity)	TOXBASE accesses	Telephone enquiries
Fabric cleaning liquid tablets (concentrated surfactants)	40,689	324
Reed diffusers (essential oils, glycol ethers, hydrocarbons, alcohols)	19,115	174
Toilet rim blocks (surfactants)	15,948	86
Bleach liquid (sodium hypochlorite)	14,071	222
Air freshener liquid (essential oils, glycol ethers, hydrocarbons)	13,143	96
Disinfectant/antiseptic/sanitiser liquid (benzalkonium chloride, alcohols, cationic surfactants)	12,488	389
Dishwasher tablet (sources of hydrogen peroxide)	11,005	176
Descaler (acids)	9,961	343
Hand cleanser (alcohols)	5,763	265
Antifreeze (ethylene glycol, methanol)	4,123	178

Table 3.1.3 Country of origin of TOXBASE sessions together with rate of enquiry per 100,000 population in 2010/11 and 2017/18

	2010/11		2017/18	
Country	Number of TOXBASE sessions	Rate per 100,000 population*	Number of TOXBASE sessions	Rate per 100,000 population**
England	376,657	721.1	527,511	948.4
Northern Ireland	10,620	590.2	14,734	787.9
Scotland	49,807	953.8	53,615	988.3
Wales	28,027	932.2	32,799	1049.6
UK	**465,111**	**747.0**	**628,659**	**951.9**

* Based on mid 2010 population estimates viewed June 2011 (UK total = 62,261,300) www.statistics.gov.uk/statbase/Product.asp?vlnk=15106

** Based on mid 2017 population estimates viewed July 2018 (UK total = 66,040,200) https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/annualmidyearpopulationestimates/mid2017#uk-population-reaches-66-million

By mid-2017, the UK population had increased by 6.1% from mid-2010. Table 3.1.3 demonstrates that the increase in rate at which healthcare professionals access TOXBASE per head of population has far exceeded the rate at which the UK population has grown, with sessions per head of population increasing by 27.4% over the last 7 years. This has happened across the whole of the UK, with the largest increase seen in Northern Ireland.

3.2 TOXBASE app for iOS and Android mobile devices

The NPIS identified a need to deliver information directly to individual healthcare professionals and the TOXBASE app was developed in response to advancing technology and user feedback. It offers convenient mobile access for users at the point of care. The app is synchronised with online TOXBASE content and for the first time provides offline access when no internet connection is available, making it an invaluable resource for emergency responders.

The app was first made available in October 2012 for iPhone and iPad and for Android devices in May 2013. In late 2015 a new version of the app was launched, providing NHS, PHE and Ministry of Defence (MOD) users with full and free access on validation of accounts using NHS/PHE/MOD email addresses. For non-NHS subscribers, a subscriber version of the app is available which contains key TOXBASE entries considered by the NPIS to be most useful to those seeking poisons information from around the world. Funds from the small fee charged (£6.99) contribute towards development and hosting costs.

The number of subscribers changes on a daily basis as accounts are created, lapse and are renewed, but on 31 March 2018 there were 12,015 current subscribers (11,379 NHS/PHE/MOD [95%] and 636 non-NHS/PHE/MOD) (Figure 3.2.1). NPIS physicians and specialists in poisons information have access to support their NPIS duties and to increase service resilience in case of local or national failures of internet access. Only 6% of subscribers were located outside the UK. The top workplace and user types are shown in Table 3.2.1; ambulance personnel were the most common.

Between 1 April 2017 and 31 March 2018, app subscribers (excluding NPIS users) accessed 122,033 pages including 101,275 product pages, 18,465 information pages and 2,293 antidote pages. This represents a 50.8% increase in accesses from 2016/17. Table 3.2.2 shows the top product pages being accessed on the app. Examples of screenshots from the app are shown in Figure 3.2.2. Examples of feedback from TOXBASE app subscribers are provided in Box 3.2.1.

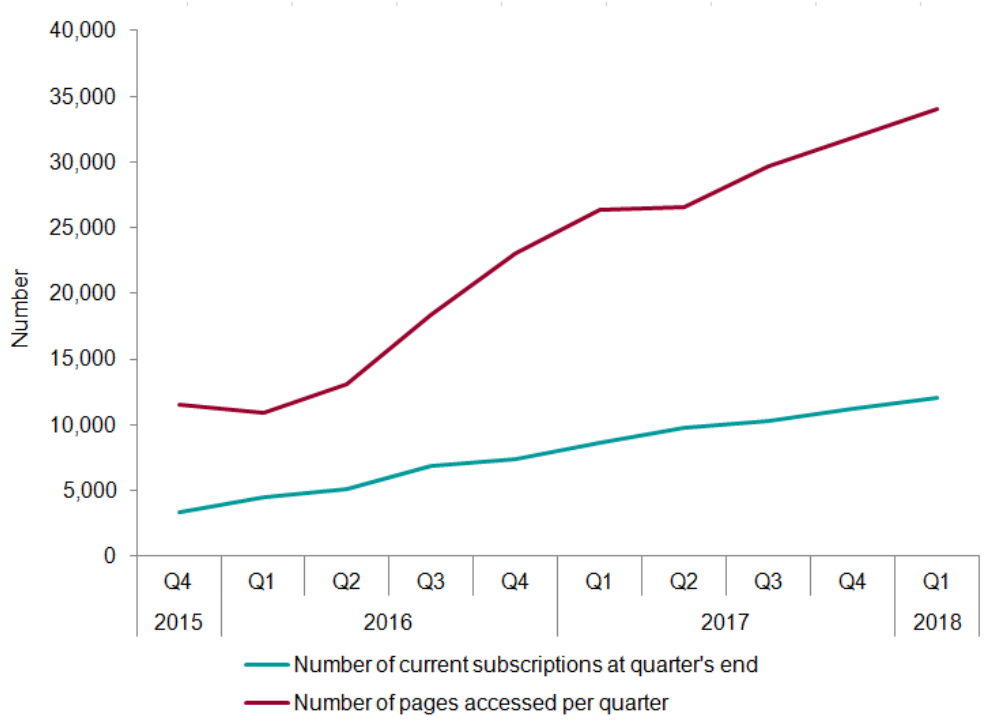


Figure 3.2.1 TOXBASE app subscriptions and pages accessed per quarter from end Q4 2015 to end Q4 March 2018

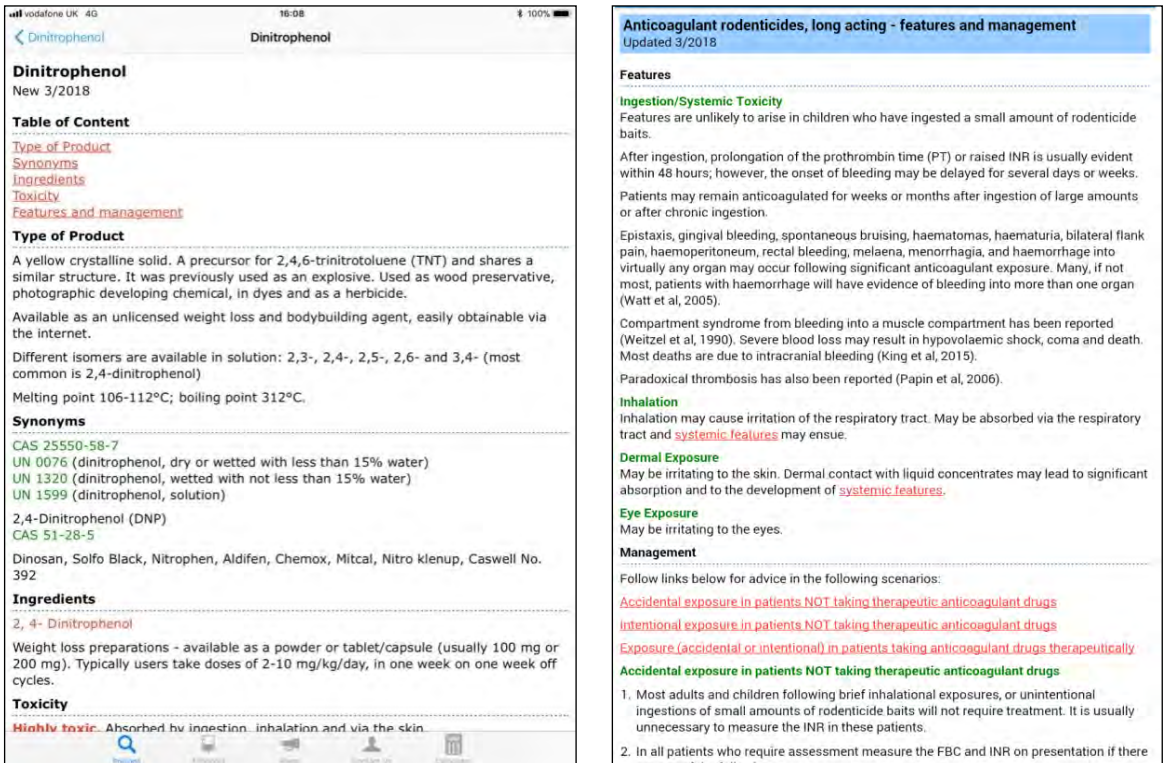


Figure 3.2.2 TOXBASE app screenshots

Table 3.2.1 Top workplace and user type of current TOXBASE app subscribers at 31 March 2018*

Workplace type	NHS/PHE/MOD	Non-NHS	All
Ambulance	6,015 (53%)	97 (15%)	6,112 (51%)
Emergency department	1,772 (16%)	195 (31%)	1,967 (16%)
General practice	864 (8%)	23 (6%)	887 (7%)
Admissions/assessment	782 (7%)	12 (3%)	794 (7%)
ITU/HDU	594 (5%)	26 (7%)	620 (5%)
Psychiatry	267 (2%)	7 (1%)	274 (2%)
Pharmacy	239 (2%)	23 (6%)	262 (2%)
User type	**NHS/PHE/MOD**	**Non-NHS**	**All**
Ambulance**	4,457 (39%)	73 (11%)	4,530 (38%)
Doctor	3,764 (33%)	254 (70%)	4,018 (33%)
Nurse	783 (7%)	19 (5%)	502 (4%)
Pharmacist	288 (3%)	27 (7%)	315 (3%)
Allied health professional*	117 (1%)	5 (1%)	122 (1%)

* categories are input by users during registration

** many of those working within ambulance services select ‘allied health professional’ when registering

Table 3.2.2 Top product pages accessed on the TOXBASE app April 2016 to March 2018

	Product pages	No. accesses		Product pages	No. accesses
1	Paracetamol	8,703	6	Quetiapine	1,684
2	Amitriptyline	2,462	7	Mirtazapine	1,609
3	Sertraline	2,149	8	Citalopram	1,492
4	Ibuprofen	2,072	9	Tramadol	1,455
5	Diazepam	1,741	10	Zopiclone	1,366

BOX 3.2.1 Feedback from TOXBASE app subscribers

"An indispensable product that has surely contributed to improvements in patient triage and clinical care."
Ambulance service user

"The TOXBASE app gives me the information I need in an easily accessible and comprehensive manner."
Laboratory scientist

"It suits my need completely, being intuitive, comprehensive and trusted"
Ambulance service user

"It's excellent data that I greatly appreciate having in my pocket."
Pharmacist

3.3 Consultant referrals

Background

The NPIS has operated a national consultant clinical toxicology on-call rota for the UK and the Republic of Ireland (out-of-hours) since May 2005. Thirteen consultant clinical toxicologists from the four NPIS units and three consultants from hospitals in York and London contribute to out-of-hours cover (weekdays 18:00-09:00 hours, weekends and public holidays).

All staff on the rota are involved in the care of poisoned patients in their own local NHS hospitals. A nationally agreed protocol is used to determine when specialists in poisons information should refer enquiries to a consultant. The national consultant rota is managed from NPIS Edinburgh.

For daytime cover, units make local arrangements and may be supported by consultants, academic clinical staff and specialist registrars who are not on the UK NPIS consultant toxicologist rota, but all enquiries are answered under the supervision of NPIS consultants.

NPIS Edinburgh also provides consultant support for enquiries from Northern Ireland during the working week. Units provide cross-cover in emergencies and occasionally support colleagues in other units during the working week. Details of all telephone calls to the NPIS are stored on the UKPID central servers and sent to the relevant consultant for local or national audit and checking. In addition, consultants keep contemporaneous local records of advice given which are added to the records by the NPIS unit that took the original call.

Consultant referrals

There were 1,907 referrals made to NPIS consultants (daytime and out-of-hours) in 2017/18, a decrease of 2.9% on 2016/17. Figure 3.3.1 shows the number of referrals by month over the past four years and their distribution by day of the week is shown in Figure 3.3.2. The median number of referrals per day was five (interquartile range, IQR, 3-7), with fewer referrals made at the weekend. Referrals by country are shown in Table 3.3.1. The great majority of consultant referrals came from calls originating in hospitals (1,757 or 92.1%; Table 3.3.2), with calls from GPs/primary care being the next most common source (101 or 5.3%). The proportion of consultant referrals following calls from NHS 111, NHS 24 and NHS Direct remained low at 1.0% of referrals.

The enquiries

Table 3.3.3 shows the most common types of agents involved in referrals to consultants. Heading the list are products containing paracetamol, drugs of misuse, bites and stings and toxic alcohols or glycols, e.g. ethylene glycol, methanol and antifreeze. For 162 referrals, the product taken (if any) was unknown and help with diagnosis was required. Alcohol was involved in 103 referrals.

Feedback into NPIS services

Analysis of consultant referrals is used to improve the services offered by the NPIS. Outcomes include additions and changes to TOXBASE entries that reflect user needs. Issues highlighted by difficult or complex calls are discussed further among NPIS staff by email or telephone at regular TOXBASE Editing Group meetings or at the NPIS CPD meetings.

Conclusions

The NPIS national out-of-hours on-call consultant rota continues to work well. Frequent contact by email and telephone, together with regular educational meetings, helps to ensure consistency of advice and patient care. Information gleaned from analysis of the enquiries has assisted in identifying toxicological and methodological problems, improving the clarity of TOXBASE entries and informing the need for research in a number of areas.

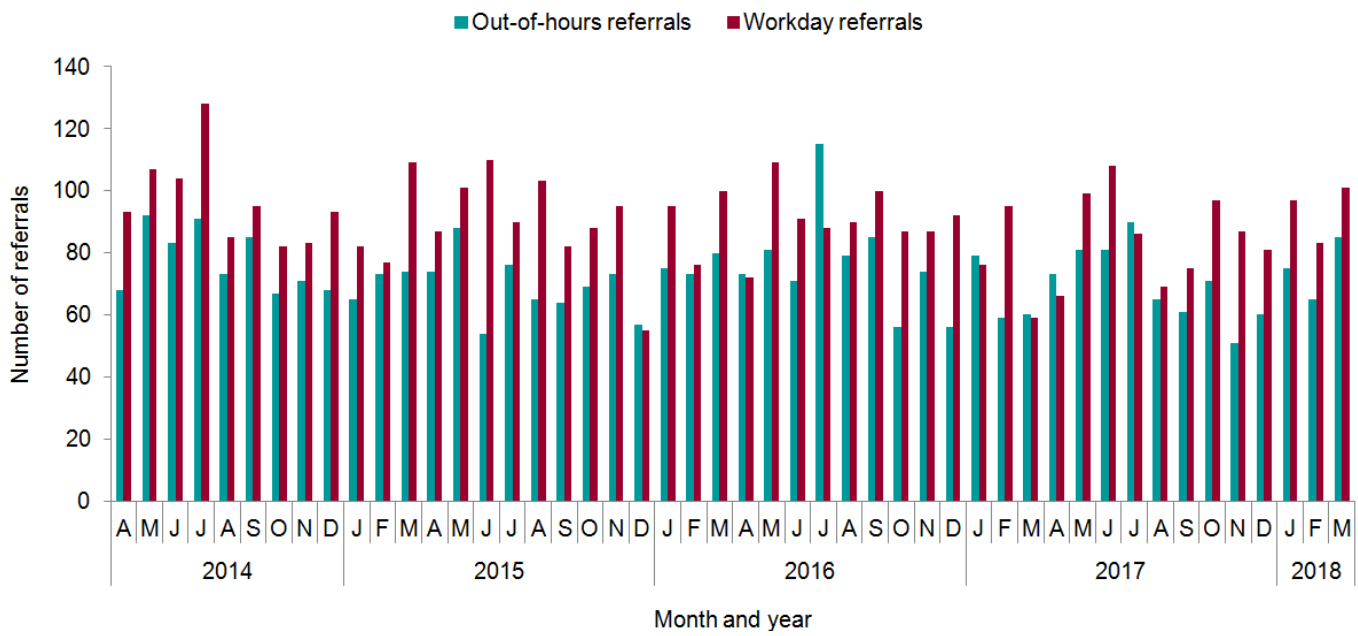


Figure 3.3.1 Monthly consultant referrals (given as out-of-hours and workday referrals) from April 2014 to March 2018

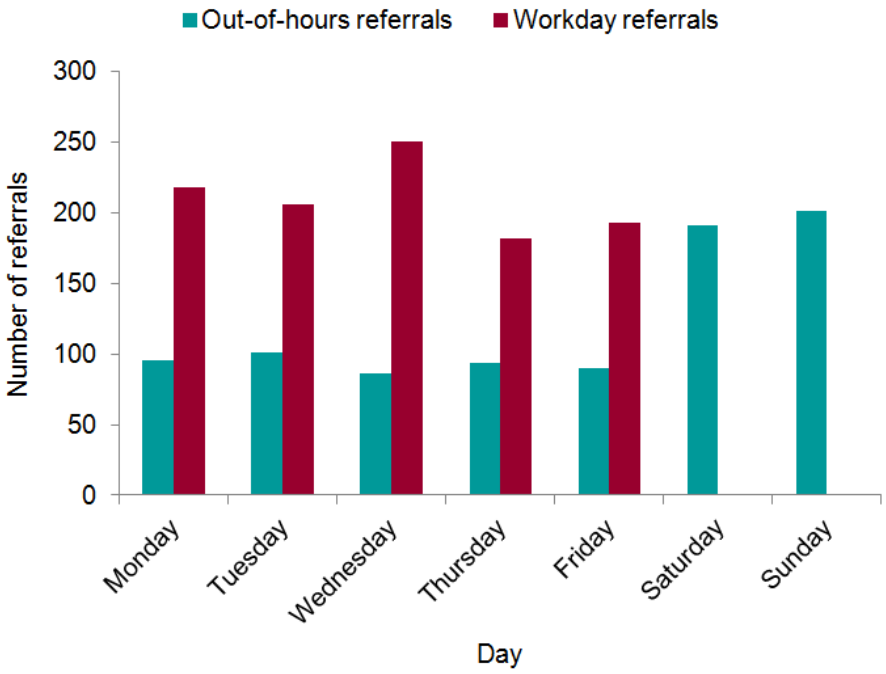


Figure 3.3.2 NPIS consultant referrals by day of the week (given as out-of-hours and workday referrals) in 2017/18

Table 3.3.1 NPIS consultant referrals by country in 2017/18, with 2016/17 percentage values for comparison

	2017/18			
Country	**Number of referrals**	**Rates per 100,000 population***	**% in 2017/18**	**% in 2016/17**
England	1,479	2.7	77.6	76.9
Northern Ireland**	32	1.7	1.7	0.8
Scotland	258	4.8	13.5	15.4
Wales	110	3.6	5.8	5.5
Republic of Ireland**	26	-	1.4	1.4
Other & unknown	2	-	0.1	0.4
Total	**1,907**			

* Based on mid 2017 population estimates viewed July 2018 (UK total = 66,040,200) https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/annualmidyearpopulationestimates/mid2017

** overnight cover only

Table 3.3.2 NPIS consultant referrals from hospital by department in 2017/18

Source	Number of referrals from hospital (1,757)	% of total referrals (1,907)
Emergency departments	753	39.5
Intensive care units	423	22.2
Paediatrics	195	10.2
Other hospital units	143	7.5
General medicine	76	4.0
Admission/assessment units	76	4.0
Unspecified hospital units	47	2.5
Medicines information & pharmacy	17	0.9
Surgical	16	0.8
Psychiatric units	8	0.4
Minor injuries units	3	0.2

Table 3.3.3 Agents commonly involved in NPIS consultant referrals in 2017/18

Rank	Agent	Number of referrals
1	Paracetamol (including 56 co-codamol)	416
2	Drugs of misuse	206
3	Drug/substance unknown	162
4	Ethylene glycol, methanol and antifreeze	114
5	Bites and stings	82
6	Iron	66
7	Digoxin	57
8	Amitriptyline	56
9	Propranolol	55
10	Amlodipine	45
10	Quetiapine	45
10	Sertraline	45

3.4 NPIS Product Data Centre

In order for the NPIS to provide accurate advice on the treatment and management of patients exposed to consumer products, reliable information on the composition of these products is necessary. Manufacturers' product safety datasheets (SDS) also provide information for updating TOXBASE, enabling end-users to obtain specific advice on many common products. All NPIS staff have 24-hour access to the NPIS Product Data Centre (PDC).

NPIS Birmingham has the responsibility for the NPIS PDC and for liaising with manufacturers to ensure that the data held are comprehensive and up to date. In 2017/18, some 23,000 SDS were added to the NPIS PDC which now holds more than 221,000 SDS. The database is indexed by product name, manufacturer, date of SDS, and the accession date for the SDS to the database. If these fields are insufficient, the database is also fully text searchable, which enables searches to be made on any other criteria, e.g. active ingredients or use.

3.5 NPIS Literature Database and Current Awareness in Clinical Toxicology

To ensure that NPIS staff are equipped to answer enquiries on all aspects of human toxicology and that TOXBASE is kept up to date, access to current scientific literature is essential. All NPIS staff have 24-hour access to the NPIS Literature Database, which was created and is maintained by NPIS Birmingham. The database currently contains 128,000 citations on all aspects of clinical, occupational and environmental toxicology. In 2017/18, some 6,482 references were added to the database, which is fully searchable using keywords, authors, journals and text words. Citations are selected using searches specially developed for the purpose and run against PubMed. The underlying database, including monthly updates, is provided to all NPIS staff for inclusion in their personal citation manager either in Reference Manager™ or EndNote™ formats.

For more than 25 years, Current Awareness in Clinical Toxicology has been circulated monthly to staff of the UK National Poisons Information Service and, via the International Clinical Toxicological Societies (the American Academy of Clinical Toxicology, the European Association of Poisons Centres and Clinical Toxicologists and, more recently, to the Asia-Pacific Association of Medical Toxicology) to readers in Poisons Centres worldwide. Spontaneous and regular comments from readers have testified to the value of this monthly citation of the published literature, which was made possible by the generous financial support of the UK Departments of Health, via Public Health England most recently. The decision was taken in March 2018, however, that this support cannot continue as there are greater financial priorities within the National Poisons Information Service.

3.6 NPIS website

This website is focused primarily on providing information to members of the public. It contains information on the structure and function of the NPIS, details of the range of services provided to health professionals on all aspects of poisoning and links to affiliated organizations and relevant websites. Visitors to the website can also download NPIS publications including annual reports back to 2004.

The website was created and is maintained by NPIS Birmingham with collaboration from the other units. The website is updated continuously, particularly with the data in each new annual report.

Between April 2017 and March 2018 the site had 34,900 visitors, there were 71,100 page loads and 1,800 documents were downloaded, the most popular were the NPIS annual reports. Visitors came predominantly from the UK, the US, Australia, India, Ireland and Germany.

4. UKTIS activities in 2017/18

4.1 Overview of the service

The UK Teratology Information Service (UKTIS, previously called the National Teratology Information Service or NTIS) is commissioned by Public Health England to provide evidence-based information on drug and chemical exposures during pregnancy and to guide the best use of medicines for women who are pregnant. UKTIS was established in 1983 and transferred to Newcastle in 1995. It is a founder member of the European Network of Teratology Information Services.

UKTIS also undertakes systematic follow-up of selected pregnancies reported to the service so that fetal outcomes can be recorded for the purpose of national and global teratogen surveillance. Integration of UKTIS within the NPIS offers the unique opportunity for follow-up of pregnancy outcome following maternal poisoning to inform risk assessment and management of future cases.

Recognition of the services provided by UKTIS and the expertise involved has continued to increase, leading to endorsement and promotion of UKTIS and its ***bumps*** patient information leaflets by key organisations and websites. These include NHS Choices, the Royal College of General Practitioners (RCGP) and the Royal College of Obstetrics and Gynaecology (RCOG).

4.2 Information provision

Information has been provided via telephone since the service was established. This allows discussion of cases with an expert scientist and, when necessary, a consultant teratologist. Currently, the telephone service is available during office hours for routine enquiries, but urgent enquiries are answered on a 24-hour basis in partnership with the NPIS.

In 2010, staged modernisation of the service was initiated to address the increasing demand for information regarding risk to the fetus following maternal exposures during pregnancy. Widespread use of the internet by both health professionals and the public offered the opportunity to reduce pressure on the UKTIS national telephone line by increasing the provision of standardised written information. This online information is currently provided in three formats:

- detailed and fully referenced scientific pregnancy monographs are available for registered health professionals on the NPIS database, TOXBASE. These

monographs provided an overview and assessment of studies and data relating to fetal risk or pregnancy outcome for over 350 exposures, offering a 24-hour alternative to the UKTIS national telephone service for non-complex enquiries that do not require a case-specific risk assessment.

- summary scientific information is available openly in the form of the abstracts of the detailed pregnancy monographs, available from the UKTIS website (www.uktis.org).
- patient information leaflets on common or otherwise important drugs and chemicals has been available since April 2014 on a purpose built public facing website ***bumps*** – best use of medicines in pregnancy (www.medicinesinpregnancy.org).

UKTIS activity

Enquiry and website access numbers by year and category are shown in Table 4.2.1. In recent years there has been a clear trend towards preferential use of openly available online information, with declining requirement for information provision by telephone and reduced use of detailed pregnancy monographs.

Table 4.2.1 Telephone enquiries, full monograph (www.toxbase.org), monograph summary (www.uktis.org) and *bumps* leaflets downloads (www.medicinesinpregnancy.org) showing the evolution of UKTIS information provision and user access over the past eight years as absolute figures and as the percentage of enquiries for each year

	Telephone enquiries		TOXBASE (registered user access)		UKTIS (open access, launched 2012)		*bumps* (open access, launched 2014)		
Year	n	%	n	%	n	%	n	%	Total
2010/11	3,722	9.0	37,591	91.0					41,313
2011/12	3,260	5.4	46,061	76.7	10,697	17.8			60,018
2012/13	2,888	2.0	58,067	40.6	81,952	57.4			142,907
2013/14	2,866	1.5	64,876	34.2	121,780	64.3			189,522
2014/15	2,529	0.6	56,799	13.0	160,351	36.4	221,053	50.2	440,732
2015/16	2,098	0.15	45,635	3.2	173,851	12.3	1,193,811	84.4	1,415,395
2016/17	1,876	0.10	43,584	2.4	300,412	16.8	1,445,045	80.7	1,790,917
2017/18	1,689	0.06	38,461	1.4	541,476	20.0	2,138,290	79.0	2,719,916

Accesses to the summary scientific information on the UKTIS website have passed half a million per year, but most impressive in terms of impact on UKTIS information uptake are the accesses to the 187 pages of patient focused information about therapeutic, chemical and other exposures during pregnancy on the ***bumps*** website. This information attracted over 2 million page loads during 2017/18. Google analytics (available since Nov 2017) identifies that 27% of ***bumps*** users are UK-based, suggesting more than half a million accesses from the UK. Although use of our fully referenced and more detailed scientific monographs on TOXBASE has steadily decreased, maintenance of these documents remains key to providing a sound evidence-base and robust governance process to underpin the writing and updating of the scientific abstracts and publically available ***bumps*** leaflets.

Taking all of these formats together, UKTIS provided information in relation to more than 2.7 million information requests during 2017/18 when considering telephone enquiries and online accesses together.

4.3 Surveillance and research

Teratology staff stay up to date with developments in the field of teratology through collaboration on a variety of externally funded research projects focussed around novel and improved public health surveillance methodologies, risk communication, and safer and/or more effective therapies for pregnant women. Results of routine surveillance of pregnancy outcomes are published when appropriate, and this year data on outcomes after metformin exposure were published in collaboration with other teratology information services. Related to the surveillance performed by the service, UKTIS staff also contribute to national and EU-wide regulatory reviews.

UKTIS staff are also supporting the EMPOWER study (EMesis in Pregnancy – Ondansetron With mEtoclopRamide), which is a randomised controlled trial funded by the National Institute for Health Research, with the primary aim of determining the best treatment regime for hyperemesis gravidarum. This is the most severe form of pregnancy sickness and affects 1-3% of women. UKTIS will be contributing expertise in the collection of pregnancy outcome data and analysis. Data collected in this study will be merged with that from other sources, including those collected through the European Network of Teratology Information Services (ENTIS) network or electronic health record linkage.

4.4 Education and training

As in previous years, UKTIS continue to provide sessions on prescribing in pregnancy at established training courses, such as that run by the Drug and Safety Research Unit

(DSRU) as well as invited lectures at conferences and within specific NHS departments. Feedback is consistently positive and highlights the need for units such as UKTIS with expertise in this area.

Despite strong competition from France, UKTIS was selected to host the 3rd International Joint Meeting of ENTIS and the Organization of Teratology Information Specialists (OTIS) in Newcastle upon Tyne, UK from 6-8 September 2018. This event will be preceded by the first UK Teratology Education Course, organised by UKTIS. These two events will bring together teratology, birth defect and neurodevelopmental expertise from around the world and will include lectures by local and international specialists (Figure 4.4.1).

Figure 4.4.1 UK Teratology Education Course and ENTIS/OTIS meeting

5. Clinical governance

The NPIS places the strongest emphasis on the quality of the clinical services it provides, with patient safety being our highest priority. To achieve excellent clinical outcomes, rigorous clinical governance standards are maintained. Key features of our approach are detailed in Box 5.1.

BOX 5.1 Key features of NPIS clinical governance

- appropriate induction, training and appraisal of all staff
- nationally organised continuous professional development with discussion of contentious issues, ensuring consistency of approach
- access to high quality information sources
- early peer review of enquiry answers and a programme of enquiry audit
- continuous support from senior staff including 24-hour availability of a consultant clinical toxicologist
- detailed and regularly updated national operational policies
- reporting and review of critical incidents, complaints and near misses so that lessons can be learned and shared throughout the service
- regular quality assurance exercises encompassing all aspects of NPIS work

5.1 Analysis of critical events

An important component of our clinical governance arrangements is the reporting and discussion of critical incidents. This encourages lessons to be learned and shared across the service when things have gone wrong and changes to policies, procedures and clinical advice can be made when appropriate. Our open culture encourages NPIS staff to report critical events, complaints, adverse comments or near misses without fear of recrimination. These critical events are reviewed initially by the Director of the originating unit; those with possible relevance to all NPIS units are reviewed at a national level at the Clinical Standards Group, where recommendations for further actions are made when appropriate. If urgent changes are required, mechanisms are available for rapid discussion amongst NPIS units and early national implementation of any required changes.

During the 2017/18 reporting year there were 11 critical events reported and discussed nationally. Of these, five concerned the information and management advice provided on TOXBASE. This needs to be considered in the context of approximately 17,000 entries on TOXBASE attracting more than a million accesses each year. In three of these cases, changes were made to the relevant TOXBASE entries to make these clearer; the other two more recent cases are still under investigation. There were two

episodes during the year where TOXBASE functionality was lost. Both were corrected rapidly and the website was unavailable to users for less than 15 minutes in each case. The eighth event concerned a minor inaccuracy that was noted by a user in the NPIS 'Low toxicity substances' poster. This poster, which can be downloaded from our websites, describes circumstances when clinically significant toxicity is unlikely to occur. The error was rapidly corrected. The ninth event involved a telephone enquiry being directed in error to a non-NPIS telephone number by a member of our staff. The risk of this was discussed with all staff and procedures put in place to reduce the risk of recurrence. The tenth case involved delays to diagnosis as a result of lack of local availability of the necessary laboratory analysis to confirm the diagnosis and establish severity. The NPIS and the Association for Clinical Biochemistry have previously provided advice to NHS hospitals on appropriate availability of laboratory assays to support the management of poisoned patients. The final case involved the NPIS being asked by a patient's solicitor for clinical information about a specific case of poisoning where the outcome had been unexpectedly severe. No concerns were identified by our internal clinical review or raised by the solicitor about the advice provided by the NPIS in this case.

5.2 Quality assurance exercises

Telephone information service user satisfaction

NPIS units have performed an annual stakeholder quality assurance exercise since 2002 in order to evaluate user satisfaction, service performance and to identify areas for improvement. This section details the findings of the 2017/18 national quality assurance exercise conducted in line with PHE contractual arrangements.

A random sample of telephone enquiries was chosen using the same methodology for each unit. We aim to survey at least 5% of telephone enquiries received by the Cardiff, Newcastle and Birmingham units, but Edinburgh is required to survey a larger proportion (10%) to achieve an adequate sample size because it is open during extended office hours only and as a result takes fewer enquiries overall.

Survey results

Between 1 April 2017 and 31 March 2018, 41,098 enquiries were answered and a total of 2,496 questionnaires were sent out, which is a 6.1% sample of telephone enquiries overall (Birmingham 5.6%, Newcastle 5.4%, Cardiff 5.6%, Edinburgh 10.5%). NPIS units received 561 responses, giving a response rate of 22.5%, which is slightly lower than in 2016/17 (24.3%).

The designation of responders reflected the profile of service users, with the three most common responder groups being general practitioners (31.6%), NHS 111 nurses (20.5%) and 'nurses -other' (10.2%).

More than half of those calling the NPIS (53.1%) had checked TOXBASE prior to making their enquiry. Of these, a large proportion (48.9%) cited the reason for phoning to be inadequate information available on TOXBASE for their enquiry. Other commonly chosen reasons were: special circumstances/other reasons (37.1% vs 31.6% in 2016/17), inability to interpret the information (9.3% vs 9.8% in 2016/17), local protocol to call NPIS (3.1% vs 2.8% in 2016/17) and the information on TOXBASE contradicted other information they had (1.6% vs 0.5% in 2016/17).

The reasons identified for not accessing TOXBASE before telephoning the NPIS are shown in Table 5.2.1.

To evaluate user satisfaction respondents were asked to what extent they agreed or disagreed with a series of statements relating to the particular enquiry they made to the NPIS. The responses received reflect a very high level of satisfaction with the way the enquiry was dealt with (Table 5.2.2).

Users were asked to indicate their overall satisfaction with the service they received from NPIS using a scale of one to six, with one indicating a very poor service and six an excellent service. The overall satisfaction with the telephone enquiry answering service remains very high, at 98.7% grading the service a five or a six (excluding non-respondents), which is a similar figure to the previous year (98.9%). Figure 5.2.1 represents the overall quality scores for the individual units.

Table 5.2.1 Reason why TOXBASE was not consulted first

Reason	% of respondents	
	2016/17	2017/18
"I don't know what TOXBASE is"	17.4	13.1
"We don't have it in our department"	26.2	22.5
"It was in a part of the department that we didn't have access to"	4.1	4.5
"We couldn't get logged on/the connection wasn't working"	17.7	22.1
"We've not been trained to use it yet"	12.0	11.2
Other	22.7	26.6

Table 5.2.2 Satisfaction scores 2016/17 vs 2017/18

Question	Satisfaction score %*	
	2016/17	2017/18
"The person I spoke to was polite and pleasant"	98.6	98.0
"Once my call was answered by a specialist in poisons information the enquiry was dealt with promptly"	98.2	98.0
"The information was given to me at an appropriate speed"	98.0	98.2
"I had confidence in the reply I was given"	97.9	98.0
"The reply from NPIS was relevant and useful"	96.6	96.9
"I was given an appropriate amount of information for my needs"	96.8	97.4
"My telephone call was answered without delay by a specialist in poisons information"	94.7	94.5

* satisfaction score is the proportion of respondents who agree 'completely' (6) or 'a lot' (5) [excluding non-respondents]

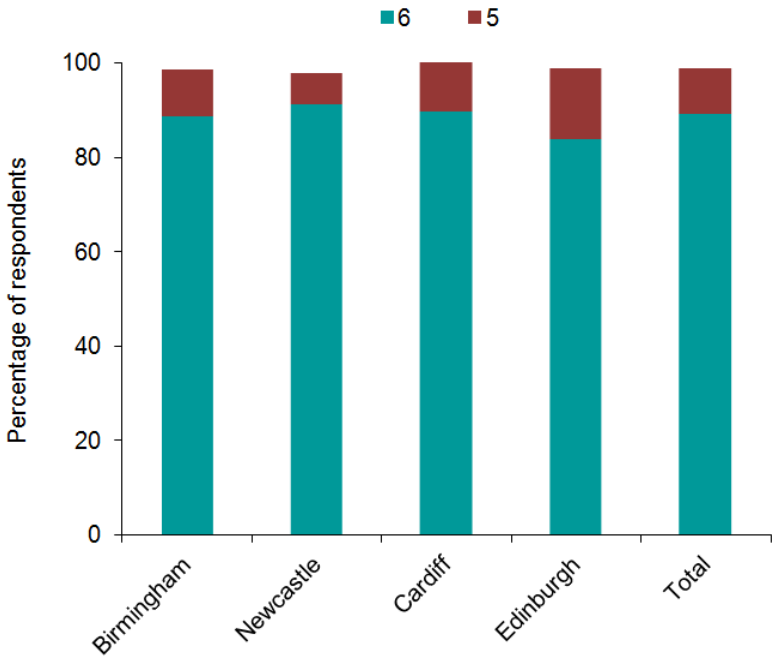


Figure 5.2.1 Overall quality scores for 2017/18 for the four NPIS units expressed as a proportion of respondents scoring 5 or 6 (non-respondents excluded from the denominator)

Summary

As in previous years the response rate this year was low at 22.5%, which is typical for surveys of this type. This may introduce bias, which could be in either direction. Respondents continue to have a very high level of satisfaction with the service overall and for individual elements of the survey. User satisfaction remains high for calls dealt with by all four NPIS units.

TOXBASE

Formal quality assurance is obtained from TOXBASE users using an online questionnaire. A selection of users are automatically asked to complete and submit one of a series of short quality assurance forms during their online session. To combat user fatigue, differing forms are presented throughout the year. Invitations are generated every five to 15 database logins; this number is varied throughout the year. A total of 960 returns were received during the 2017/18 reporting year.

Users were asked to grade a series of statements on a Likert scale of one to six where one = disagree completely, and six = agree completely. Satisfaction scores were high (Table 5.2.3). Of those asked to indicate their overall satisfaction with TOXBASE on a scale of one to six (948 responses), 884 (92.2%) scored either five (good) or six (excellent).

TOXBASE user feedback and service improvements

An important component in the review process of TOXBASE entries is user feedback. Feedback may be received from a variety of sources including TOXBASE quality assurance forms, questionnaires linked to products of interest, responses to follow-up on cases of interest, or by email, letter or telephone. Users may raise queries or provide clinical data. Issues specific to entries are dealt with as they arise or may be collated for discussion at the TOXBASE Editing Group or Clinical Standards Group meetings.

TOXBASE quality assurance forms: free text comments

Of the 960 returns, 143 (14.9%) included free text comments which can be grouped as shown in Table 5.2.4. The few negative comments centred on the appearance of the website, navigation around the database, and identifying the salient information; improvements to update the ‘usability’ and look of TOXBASE are due to be implemented over the coming year. Box 5.2.1 gives examples of comments about TOXBASE from returned forms.

Table 5.2.3 Summary of user satisfaction scores

Rank	No. of responses	Question	Satisfaction score (%)*
1	279	"I had confidence in the information for my query"	94.3
2	334	"Finding the information I required was easy"	92.8
3	279	"Logging on to the database was easy"	91.4
4	347	"The information was sufficient for managing this case"	86.2

* satisfaction score is the proportion of respondents who agree 'completely' (6) or 'a lot' (5)

Table 5.2.4 Summary of free text comments on TOXBASE from quality assurance returns

Type of comment	Number (% value) *
Positive comments and thanks	91 (63.6%)
Suggestions	36 (25.2%)
Specific issues	8 (5.6%)
Negative comments	7 (4.9%)
Comment related to other NPIS services	7 (4.9%)
Information technology	3 (2.1%)

* users often offered multiple comment types within one response

Box 5.2.1 Examples of comments about TOXBASE from quality assurance returns

"Working in ED I need quick access to reliable information. Yet again TOXBASE supplied this."

"I really think TOXBASE is a wonderful resource and we are very lucky to have it. It is intuitive to use and always answers my questions and provides a clear plan"

"Fantastic resource. Would be lost without it"

"Brilliant resource - easy to access and use"

"Your site is invaluable to my daily role (Clinical Support Desk in ambulance service). Thank you"

"Consistently excellent and invaluable in clinical practice."

"I love TOXBASE! What a great resource. Keep up the good work"

"Informative site. Very helpful to have access to especially when working in the community"

UKTIS quality assurance

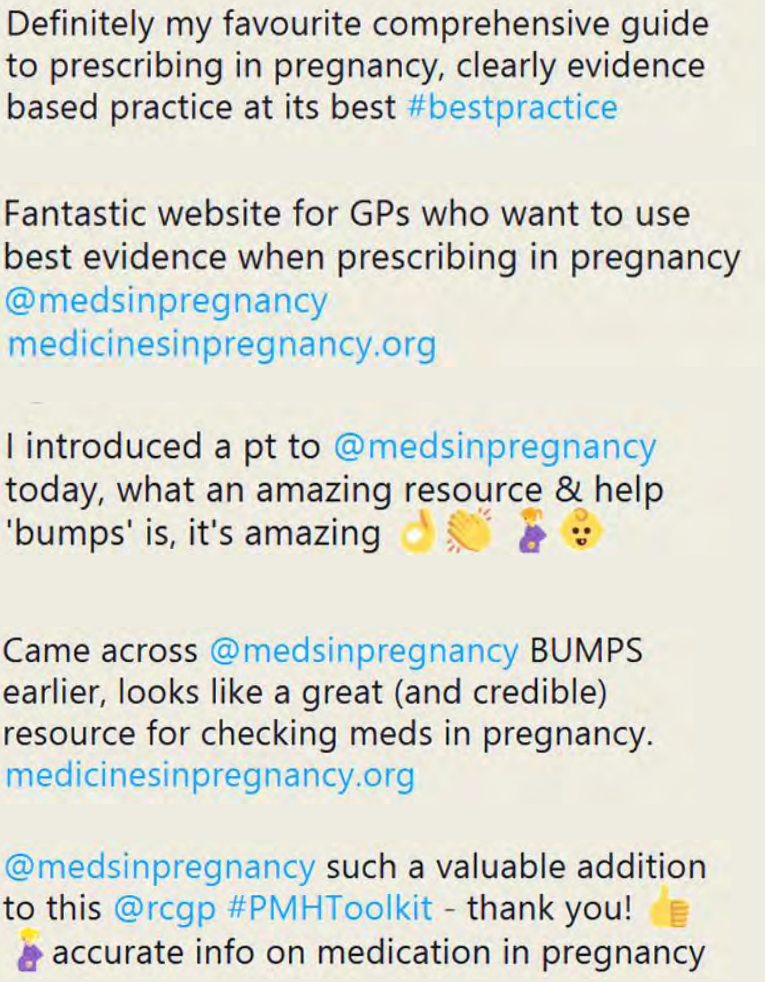
As in previous years, UKTIS has sought feedback via paper questionnaire sent to a random sample of telephone enquirers. There has, however, been a progressive reduction in responses to this questionnaire, with response rates of 20% in 2015/16 and 14% in 2016/17. For the current year, response rates have fallen substantially further, with only 10 of 350 (2.9%) questionnaires sent out being returned. This very low and falling response rate may result from increasing pressures in primary care and calls into question the usefulness of continuing with the survey in its current format. The responses that were received indicated a high degree of satisfaction with the service, with all respondents indicating that their enquiry was answered promptly and that the response was relevant and useful. Of the nine people who rated the service on a 6 point scale (1=poor and 6=excellent), six gave a rating of 6 and three a rating of 5.

Spontaneous feedback relating to information on ***bumps*** has been very positive and suggests appreciation and demand for coverage of additional exposures from a diverse user group. Feedback was received from 74 ***bumps*** website visitors via the e-feedback form, 80% of whom resided in the UK. Visitor occupation ranged widely and included, amongst others, stay at home mums, qualified and trainee doctors from various specialties including public health, NHS 111 advisors, business and legal services, students and pharmacists. In fact, 40% of visitors providing feedback classified themselves as healthcare professionals, several of whom were pregnant themselves. Eighty five percent of the 74 website visitors responding to this question, regarded the ***bumps*** website as ‘easy’ or ‘very easy’ to use. Of note, 57 (77%) of responders commented that they couldn’t find the information they were looking for on the website. Approximately 20 of these were requests for ***bumps*** leaflets regarding over the counter products for minor ailments; the remaining were for therapeutic medications. This emphasises the demand for more comprehensive information to be publically available. Feedback on the accessibility and complexity of the patient information leaflets was positive. Fifty three (71%) responders said the amount of detail in the leaflets was about right. Although 20 responders classified the information as ‘not detailed enough’, this was in the context of the website visitor not being able to find information on the exposure they were looking for. Only one responder considered the information ‘too detailed’, but left no further comment.

Feedback about our online information therefore continues to be very positive and suggests that developments in recent years have further improved the provision of information for patients and healthcare providers. As in previous years, the need to increase awareness of the service and the appetite of patients and healthcare professionals for further information and pregnancy focused treatment guidelines were apparent.

Examples of informal feedback received via Twitter regarding the ***bumps*** website (which provides openly accessible patient information sheets) is presented in Box 5.2.2.

Box 5.2.2 *bumps* end-user feedback via Twitter



5.3 Education and training

5.3.1 NPIS

Continuing professional development (CPD) for NPIS staff is an essential component of the clinical governance structure of the service. A national CPD programme equips both clinicians and scientific staff with the necessary knowledge and expertise to provide up to date, accurate, evidence-based and consistent advice on all aspects of poisoning.

Training for scientific staff

Each NPIS unit provides structured in-house training and assessment in both clinical and non-clinical domains, e.g. communication skills to prepare scientific staff for dealing with healthcare professionals who contact our service for advice. Training is structured towards learning objectives covering all aspects of clinical toxicology, from the mechanisms of toxicity to the management of poisoned patients. These are clearly set out in a national training curriculum. Additionally, scientific staff may wish to undertake a postgraduate qualification in toxicology to further enhance their knowledge and expertise.

Continuing professional development

The format of the NPIS annual CPD programme changed in 2017 from four meetings annually to two-day meetings held twice each year, with all NPIS units hosting in turn. This new format has allowed staff greater opportunity for CPD along with the benefit of networking during an evening social event. It is the responsibility of the CPD lead, an NPIS consultant appointed by the Directors every three years, to organise the rolling programme of meetings. An NPIS specialist in poisons information is also appointed every two years to ensure the needs of the scientific staff are well represented within the educational programme.

The primary role of the CPD meetings is to ensure that clinicians and specialists in poisons information remain up to date with the latest developments within clinical and academic toxicology. This includes education on new poisons, antidotes and other emerging treatment modalities.

Additionally, the meetings provide an ideal forum to educate staff about strategic developments within the service, discuss challenging clinical cases and debate new research proposals. The meetings also offer the chance for face-to-face contact and social networking between clinical and scientific staff who may previously have only had contact via the phone.

For the first time, the two-day meeting in October 2017 was held jointly with the British Pharmacological Society as part of an effort to promote clinical pharmacology and clinical toxicology to trainees (Box 5.3.1). The meeting was also attended by guest visitors from Egypt after approval of their request for training in clinical toxicology by NPIS Directors.

All NPIS staff are encouraged to participate in research and submit papers to peer reviewed journals and national and international meetings such as the British Toxicology Society and the European Association of Poisons Centres and Clinical Toxicologists.

Box 5.3.1 NPIS CPD meeting, NPIS Newcastle

Venue: The Research Beehive, Newcastle upon Tyne

Day 1: Thursday 5 October 2017

SNAP: the nuts and bolts of a 12-hour acetylcysteine regimen
Dr Ruben Thanacoody, NPIS Newcastle

SNAP: a tale of two cities
Dr Muhammad Elamin, NPIS Newcastle
Dr David Wood, Guy's & St Thomas' Foundation Trust

SNAP chat: is there a way forward? *Open discussion*

NPIS radiation calls *Dr Simon Hill, NPIS Newcastle*

TOXI-triage *Prof Michael Eddleston, NPIS Edinburgh*

Environmental public health implications of arsenic poisoning; a case review in the Yorkshire and Humber region *Amanda Cresswell & Victoria Tuner, PHE*

Paracetamol overdoses in pre-term and neonates *Dr Mark Anderson, NPIS Newcastle*

TOXBASE: update on paracetamol *Dr Aravindan Veiraiah, NPIS Edinburgh*

Day 2: Friday 6 October 2017

Forensic aspects of clinical pharmacology *Prof Robin Ferner, Birmingham University*

Mechanisms of hyperthermia *Dr Simon Hill, NPIS Newcastle*

Novel opioids/fentanyls *Prof Simon Thomas, NPIS Newcastle*

Vaping of recreational drugs and novel psychoactive substances
Dr David Wood, Guy's & St Thomas' Foundation Trust

ITCT Diploma in Clinical Toxicology *Dr Noha Fawzy, Cairo University*

TOXBASE: long-acting anticoagulants L*eonard Hawkins, NPIS Newcastle*

Identifying signals of teratogenic effects of medicinal products using the MHRA Yellow Card ADR data *Dr Luke Richardson, UKTIS Newcastle*

NPIS rota changes *Alex Capleton, NPIS Cardiff*

5.3.2 NPIS/Emergency medicine training

As in previous years, the NPIS and the Royal College of Emergency Medicine (RCEM) organised joint CPD days which were held in London in June and Newcastle in November 2017. These covered important topics in clinical toxicology using case-based presentations and gave delegates the opportunity to discuss specific issues with experts from the NPIS. The CPD days were well attended by consultants and trainees in Emergency Medicine from across the UK who provided excellent formal feedback about the teaching provided.

5.3.3 TOXlearning – a clinical toxicology e-learning resource

A clinical toxicology e-learning resource was first developed by NPIS Edinburgh in 2005 has been available to NHS healthcare professionals across the UK in its current form (Figure 5.3.1) since December 2013 at www.toxlearning.co.uk.

This provides a useful and accessible training resource for those who wish to learn how to use TOXBASE effectively when handling enquiries about poisoning, as well as training in the management of common overdoses. The NPIS recommends that TOXBASE users of all types and grades complete the 'Using TOXBASE' module (see Box 5.3.2). Registration and access are free; users can work through courses at their own pace, save their work, obtain their scores and print off their results for continuing professional development files.

Figure 5.3.1 Screenshot from www.toxlearning.co.uk

Box 5.3.2 TOXlearning module details

Module 1 – Using TOXBASE

This module, which represents 75 minutes of learning, is designed to assist new and existing TOXBASE users to use the database more effectively

Module 2 – Clinical management of the poisoned patient

This module, which represents 180 minutes of learning, includes units on:

- general aspects of poisoning
- problematic poisons
- common poisons
- drugs of misuse

6. Areas of interest in 2017/18

6.1 Drugs of misuse

Introduction

Enquiries relating to drugs of misuse form an important component of the work of the NPIS. Telephone enquiry numbers and volume of TOXBASE accesses give an indirect indication of the drugs of misuse most commonly encountered by health professionals and the data can be used to follow trends with time and to characterise features of toxicity reported for different substances. These data can be of value in assessing toxicity relating to drugs of misuse and are shared periodically with responsible agencies including Public Health England, the Advisory Council on the Misuse of Drugs (ACMD), the UK Focal Point (UK FP) and the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA).

Methods

For this report, telephone enquiries are selected if the exposure is to a substance with no medicinal use or other purpose than drug misuse, or if it is classified as ‘recreational’ by the specialist in poisons information receiving the call, irrespective of the substance involved. This has the advantage that recreational misuse of substances not previously recognised as drugs of misuse can be detected.

The intent of the exposure is not available when using TOXBASE access data. For example looking at TOXBASE access data relating to diazepam would not allow insight into whether the access related to an exposure that was for recreational drug misuse, self-harm or therapeutic error. For this reason accesses to TOXBASE pages that relate to licensed medications are omitted from cumulative data. There are two exceptions, methylphenidate and methadone, which are included because these are under specific surveillance.

Overall activity

In 2017/18 there were 1,245 NPIS telephone enquiries relating to drugs of misuse, which is a 2.9% increase compared to 2016/17. These enquiries related to 333 different substances or products and accounted for 3.0% of all NPIS telephone enquiries. There were also 63,373 TOXBASE accesses relating to 994 different substances or products and accounting for 3.2% of all TOXBASE accesses.

Table 6.1.1 Top 10 drugs/substances of misuse involved in telephone enquiries, TOXBASE accesses

	Telephone enquiries	n (2017/18)	% change (from 2016/17)
1	Cocaine (inc crack)	256	57.1%
2	MDMA (inc ecstasy)	164	17.1%
3	Cannabis	135	16.4%
4	Heroin	96	41.2%
5	Unknown drug of misuse	86	-14.0%
6	Diazepam	72	-5.3%
7	Codeine (inc co-codamol)	70	70.7%
8	Pregabalin	62	63.2%
9	Methadone	62	-7.5%
10	SCRAs	59	15.7%
	TOXBASE accesses	**n (2017/18)**	**% change (from 2016/17)**
1	Cocaine (inc crack)	11,971	4.1%
2	MDMA (inc ecstasy)	10,057	-2.2%
3	Heroin	4,810	-7.5%
4	Cannabis	4,328	11.3%
5	Amfetamine	4,108	3.2%
6	Methylphenidate	3,945	1.1%
7	SCRAs	3,528	11.4%
8	Ketamine	2,786	29.7%
9	GHB/sodium oxybate	2,694	3.9%
10	Branded products	1,845	-10.5%

Substances involved

The top 10 substances of misuse involved in telephone enquiries, TOXBASE accesses are shown in Table 6.1.1. As in previous years, cocaine, MDMA and cannabis were most commonly involved in telephone enquiries and cocaine, MDMA and heroin in TOXBASE accesses. Two medications, codeine (including co-codamol) and pregabalin, have appeared in the top 10 telephone enquiries related to drug misuse for the first time.

NPIS activity related to new psychoactive substances (NPS), sometimes previously referred to erroneously as ‘legal highs’, has in recent years primarily involved synthetic cannabinoid receptor agonists (SCRA) and branded products. The latter encompass NPS sold in branded packaging with names such as ‘Black Mamba’, ‘Clockwork Orange’, ‘Annihilation’, ‘Exodus’ and many others. Recently, the majority of these branded products have included a herbal base designed for smoking and are found to

contain SCRA when analysed, although the specific SCRA included in any particular product may vary with time and location.

For some NPS products, there may be no information on content and some may contain mixtures of substances, occasionally including controlled drugs.[4] Because of the large numbers of different products and substances involved, telephone enquiries and TOXBASE accesses to these are reported as a single, separate group.

Trends with time

It is important to monitor trend in telephone enquiry and TOXBASE data for drugs of misuse to better understand the impact of public health measures, including changes in legislation. An important recent change is the Psychoactive Substances Act (PSA) enacted on 26 May 2016. This legislation applies to any psychoactive substance if the substance is likely to be used for its psychoactive effects and regardless of its potential for harm. Specific exemptions include nicotine, alcohol, caffeine and licensed medicinal products. Offences include supply or offer to supply, production, importation or exportation, as well as possession within a custodial institution.

To assess the impact of the PSA, NPIS telephone enquiry numbers and TOXBASE accesses were compared for four consecutive financial years. The first two years were before the enactment of the PSA, while the second two years included enquiries and accesses that were almost all made after the PSA came into force, with the exception of those made between 1 April and 26 May 2016. Enquiries and accesses relating to commonly encountered NPS are presented, together with data for some common conventional drugs of misuse. It is important to include the latter group because of the concern that legislation affecting NPS might result in increased use of conventional drugs that were already controlled.

Telephone and TOXBASE access data both show reductions for common NPS in the two years since the PSA came into force. These include mephedrone, synthetic cannabinoid receptor agonists and branded NPS products. Of note, enquiries relating to mephedrone and branded products fell between 2014/15 and 2015/16, before the PSA came into force, although larger reductions were seen subsequently.

Conversely, there have been increases in telephone and TOXBASE activity relating to some common conventional drugs of misuse including cocaine, MDMA (‘ecstasy’) and cannabis. Overall, however, telephone enquiries and (to a lesser extent) TOXBASE accesses relating to all drugs of misuse (NPS and conventional) have fallen in the last two years (Table 6.1.2).

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4 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/368587/NPSevidenceReview.pdf

Table 6.1.2 Overall NPIS drug of misuse activity and for selected drugs for two years before and two years after the Psychoactive Substances Act, 2016

Telephone enquiries	2014/15	2015/16	2016/17	2017/18
New Psychoactive Substances				
Mephedrone	85	55	14	13
SCRA	74	108	52	59
Branded products	391	276	74	36
Traditional drugs				
Cocaine	164	172	163	256
Heroin	118	124	68	96
MDMA	122	131	140	164
Cannabis	117	109	116	135
Total	1,722	1,613	1,210	1,245

TOXBASE accesses	2014/15	2015/16	2016/17	2017/18
New Psychoactive Substances				
Mephedrone	6,622	4,385	1,454	785
SCRA	2,544	4,770	3,343	3,528
Branded products	3,699	5,703	2,062	1,845
Traditional drugs				
Cocaine	8,564	9,492	11,499	11,971
Heroin	5,221	5,626	5,201	4,810
MDMA	9,972	10,128	10,281	10,057
Cannabis	3,707	4,319	3,887	4,328
Total accesses	69,537	67,228	64,015	63,373

Ten year trends in activity for Class A, B and C drugs of misuse are shown in Figures 6.1.3 to 6.1.6. Because there have been changes in overall telephone and TOXBASE activity relating to all substances, with increasing use of TOXBASE and declining frequency of telephone enquiries, these data are normalised by expressing as a percentage of total activity. These data show recent increases in the proportion of overall telephone enquiry activity relating to cocaine, MDMA and heroin but these are not accompanied by increases in TOXBASE activity for these substances when measured in this way. These figures illustrate the longer term substantial reductions seen in activity relating to mephedrone and more recent reductions for SCRAs.

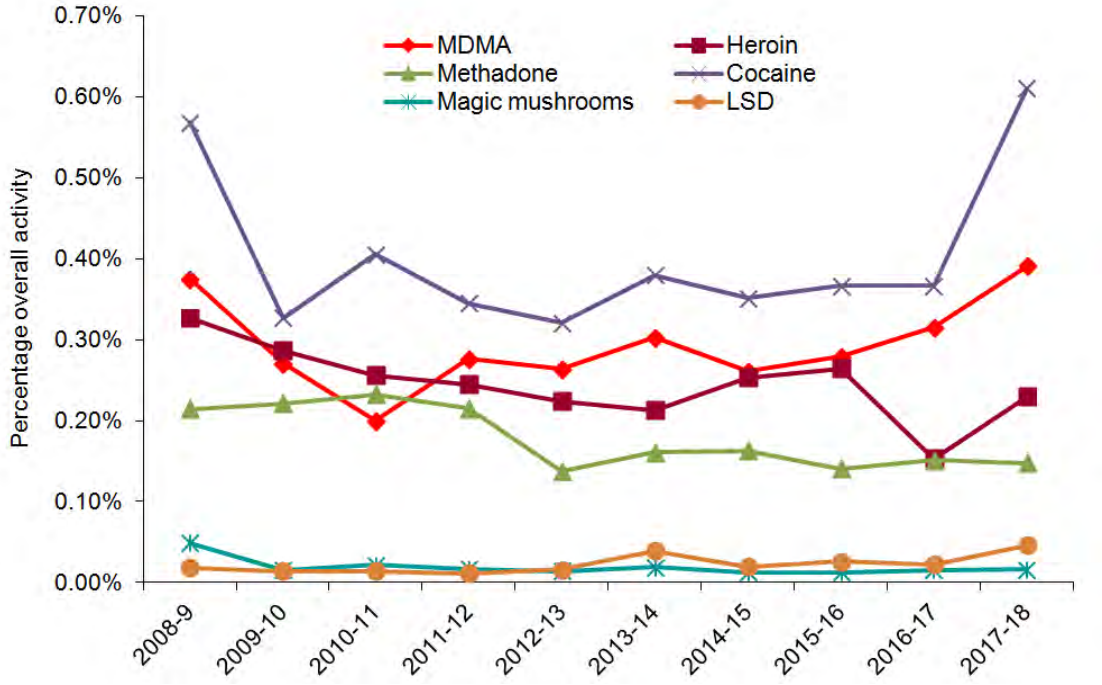

Figure 6.1.3 Telephone enquiries for legal class A by year

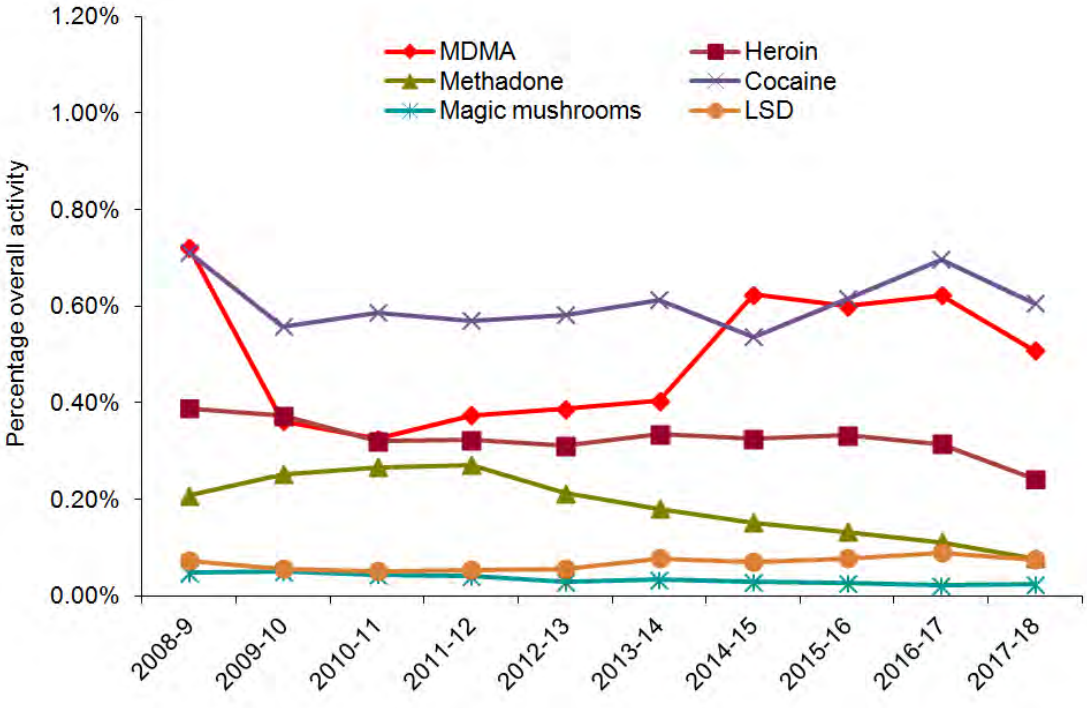

Figure 6.1.4 TOXBASE accesses for legal class A by year

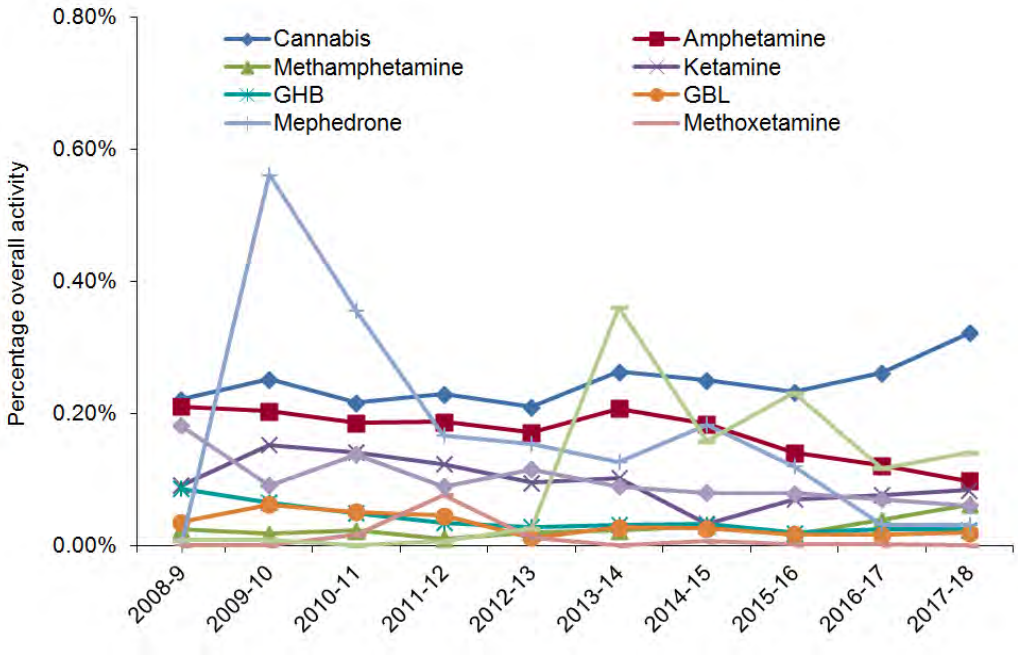

Figure 6.1.5 Telephone enquiries for legal class B and C by year

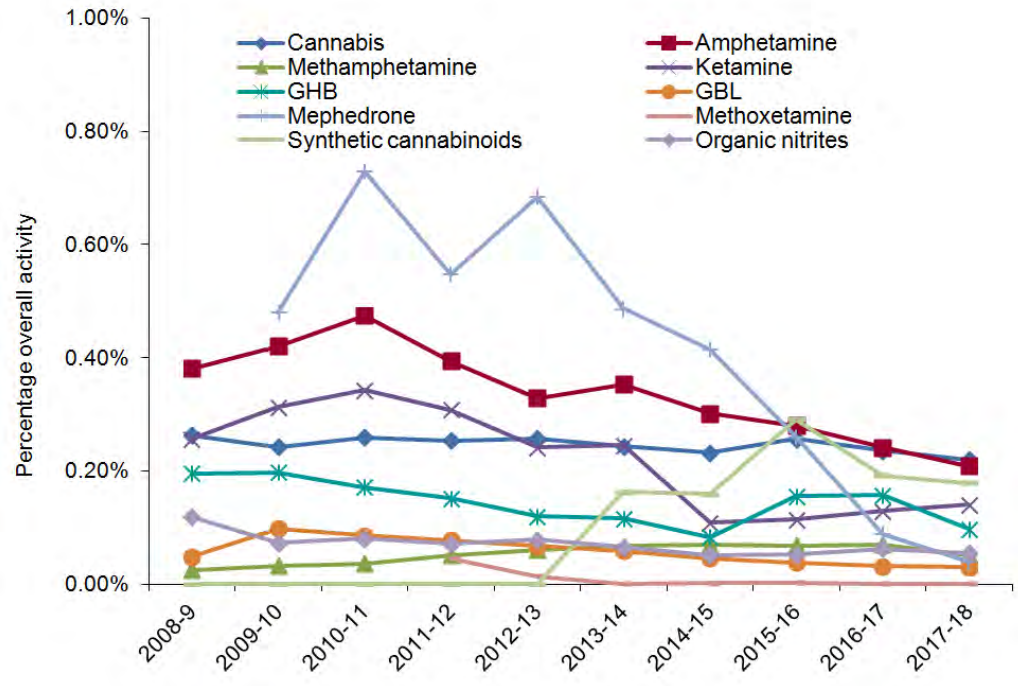

Figure 6.1.6 TOXBASE accesses for legal class B and C by year

6.2 Pesticides

The NPIS pesticide surveillance system was established in 2004 under approval of the Pesticides Safety Directorate and funded by the UK Department for Environment, Food and Rural Affairs. The work was implemented to better describe the incidence and character of pesticide exposures in the UK that result in contact with health professionals (thereby selecting for more serious exposures). Surveillance data are collated and both quarterly and annual reports are submitted to the government's Advisory Committee on Pesticides (ACP) via the Health and Safety Executive's Chemicals Regulation Directorate (CRD).

Currently, 1,563 TOXBASE entries for pesticides and biocides are being tracked, a decrease from the 1,706 tracked during 2016/17. Incident information is obtained in two ways, from follow-up of TOXBASE enquiries by an online or postal questionnaire or from data collected during NPIS telephone enquiries.

During the year, there were 4,005 accesses to TOXBASE about pesticides of interest and information on 569 potential exposures was collected via the NPIS telephone enquiry service. From the TOXBASE accesses, 325 follow-up postal or email questionnaires were completed and returned. Cases involving animals or head lice treatment products, enquiry sessions from locations in the Republic of Ireland, identifiable duplicate sessions involving the same patient, and sessions that were later reported not to have involved a pesticide, were excluded from the analysis. Of note, an unknown number of TOXBASE accesses were for educational purposes rather than care of patients, reducing the response rate denominator.

Overall, information was gathered on 975 potential exposures involving pesticides during 2017/18, an overall return rate of 20.6%. Four exposures involved multiple patients. This number is similar to the number of cases identified in 2016/17 (1,000).

Of the 975 potential exposures available for analysis, there were 21 cases where symptoms were not thought to be related to the pesticide exposure, e.g. where a pre-existing illness or concomitant infection was the likely cause of symptoms. These cases were excluded, leaving 954 exposures for further analysis. The results presented below include both unintentional acute (825 cases; 86.5%) and chronic (34; 3.7%) exposures and deliberate self-harm exposures (76; 8.0%). The circumstances of exposure in 19 (2.0%) cases were unknown.

Most exposures were graded as PSS 0 (469 cases; 59.1%) or PSS 1 (301; 31.2%). Smaller proportions were graded moderate (PSS 2; 14; 1.5%), severe (PSS 3; 2; 0.2%) or of uncertain severity (39; 3.9%) (PSS - see page 11). Three fatalities were reported (compared with none in 2016/17). All three involved acts of deliberate self-harm. One

fatality involved a large ingestion of Roundup (glyphosate). The other two cases involved exposure to products containing aluminium phosphide.

Agents of interest

The agents most commonly involved in exposures are shown in Table 6.2.1. In addition, there were 126 cases involving unknown rodenticides, 37 involving unknown insecticides, 24 unknown herbicides, nine unknown pesticides, six unknown ant killers, and one unknown wood preservative.

Table 6.2.1 Pesticides most frequently reported by respondents in suspected pesticide exposures during 2017/18 compared with 2016/17, ordered by rank in 2017/18

Ingredient	2016/17	2017/18
Permethrin	102	126
Glyphosate	107	105
Difenacoum	52	72
Metaldehyde	71	56
Imidacloprid	32	47
Bromadiolone	63	44
Cypermethrin	33	34
Phenols/cresols	34	32
Tetramethrin	25	30
Moxidectin	24	28
Fipronil	25	22
2,4-D	14	18
Bendiocarb	18	18
Cellulose	8	17

In 2017/18, patients potentially exposed to pesticide products comprised 503 adults (13 years or older, 52.7%) and 427 children (12 years or younger, 44.7%), with 24 of unknown age (2.5%). There were 513 (53.8%) male patients and 418 (43.8%) female patients and 23 cases (2.4%) where the gender was not specified.

The classes of product most commonly involved in exposures are shown in Figure 6.2.1. Multiple/combination products were involved in some incidents.

There were 15 enquiries involving pregnant patients reported in 2017/18 (10 in 2016/17). All 15 exposures were unintentional and acute. None were severe.

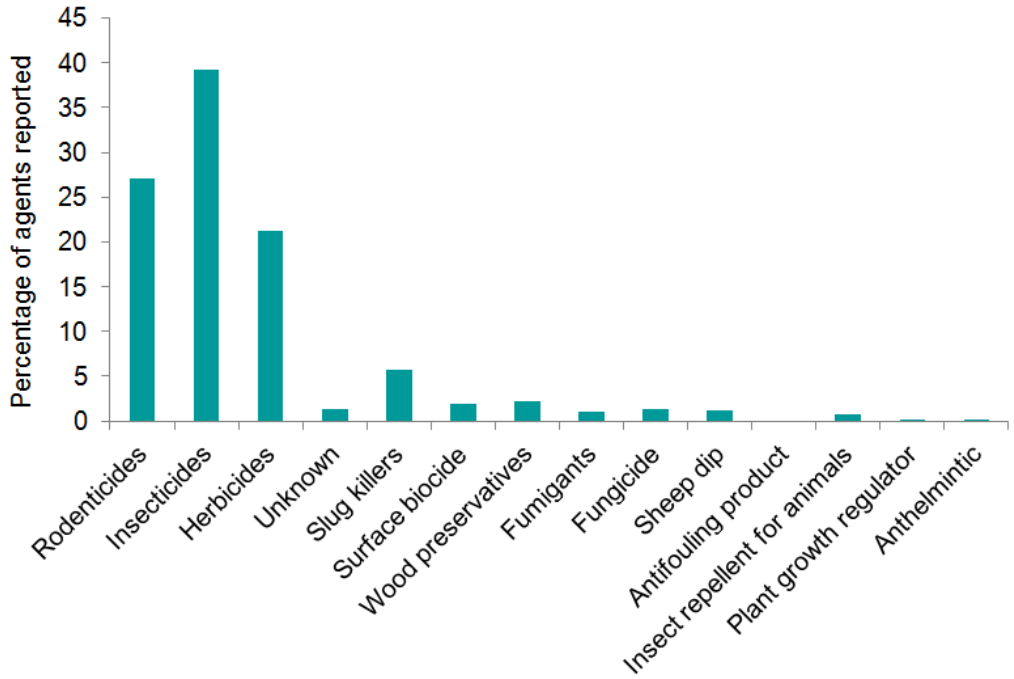

Figure 6.2.1 Class of products (as reported by respondent) involved in enquiries in 2017/18 (1,053 agents)

6.3 Carbon monoxide (CO)

Carbon monoxide (CO) exposure remains a common form of poisoning in the UK, however relatively little is known about its epidemiology.

Since July 2015, NPIS has undertaken a project funded by the Gas Safety Trust to obtain more information, in particular confirmation of exposure, from healthcare professionals contacting the NPIS.

Data are collated from telephone enquiry data via the UK Poison Information Database and follow-up questionnaires posted directly to all enquirers. For healthcare professionals accessing TOXBASE, a questionnaire is either emailed or posted directly to the user or their head of department if contact details were not submitted at the time of viewing TOXBASE.

Overall, in the period July 2015 to December 2017, data were collated and evaluated for 2,074 patient-related cases following exposure to carbon monoxide in the UK.

During the period January 2017 to December 2017, data were available for 835 patient-related exposures. Two hundred and twenty three (26.7%) were male, 250 (29.9%) were female. Gender was not specified for 362 (43.4%) patients. Exposures comprised 544 adults (≥13 yrs, 65.1%) and 144 children (≤12 yrs, 17.2%). Age was undetermined in 147 exposures (17.6%). Seventeen exposures involved pregnant women (2.0%).

Exposures in 808 patients (96.7%) were unintentional. Of these, activation of a CO alarm prompted the patients to seek medical attention in only 128 (15.8%) cases. Twenty seven patients (3.2%) were exposed due to deliberate self-harm.

When smoke/fire as the source of CO was excluded (n=90, 11.1%), the highest proportion of unintentional exposures were caused by domestic boiler issues (174, 24.2%), gas appliances (67, 9.3%), vehicle exhaust fumes (63, 8.8%) and domestic wood/coal fire burners (43, 6.0%). These CO exposures were most commonly of low severity (446, (62.1%) cases associated with no symptoms or mild symptoms only), with moderate severity recorded in 31 (4.3%) cases, severe symptoms in one (0.1%) case and death in two (0.3%) cases. Of the exposures in pregnant women, five were asymptomatic (PSS: None), 11 had symptoms of minor severity and one patient had symptoms of moderate severity.

Central nervous system symptoms were most prominent (250, 29.9%, patients presenting with one or more symptom), followed by effects on gastrointestinal system (108, 12.9%), then respiratory effects (44, 5.3%) and cardiovascular (41, 4.9%).

Blood carboxyhaemoglobin (COHb) concentrations were reported for 346 (41.4%) patients. The concentration was calculated from a blood test in 239 patients, a breath test in 18 and pulse oximeter in 20 patients. The test type was not reported for 39 patients.

A positive correlation was observed reported between symptom severity and blood COHb concentration.

The data presented here demonstrate the ability of the NPIS to collect valuable data on all aspects of CO poisoning from across the UK. With ongoing funding, the NPIS will continue to collect data to improve our understanding of the incidence and characteristics of CO poisoning in the UK.

6.4 Dinitrophenol (DNP)

2,4-Dinitrophenol (DNP) is an industrial chemical sometimes taken to promote weight reduction or by body builders for ‘body sculpting’. DNP uncouples oxidative phosphorylation, causing energy to be released as heat rather than being stored. As a

result, DNP can reduce body fat, but users face a high risk of severe toxicity including high fever, rapid heart rate, agitation, headache, diarrhoea, vomiting, convulsions, acidosis, muscular rigidity and multi-organ failure. These features may be fatal in spite of intensive, optimal medical treatment.

During 2013 NPIS staff noticed an increase in episodes of systemic DNP toxicity reported in telephone enquiries to the service. This information was shared with responsible agencies, included in our annual report for 2013/14 and published in a peer reviewed journal. Since then, we have continued to monitor episodes of DNP poisoning, providing updated NPIS data to responsible agencies and in our annual reports.

The Food Standards Agency (FSA) has responsibility for tackling the marketing and sale of DNP in the UK. It has issued warnings to the public and initiating a Twitter campaign (#DNPKills). Its National Food Crime Unit has targeted the illegal internet sale of DNP aggressively, resulting in the suspension of implicated domain names. Work has also been done with the Police and Border Force to reduce importation. Alerts have been provided to medical professionals by Chief Medical Officers of the devolved administrations and by Public Health England. Educational work has also been carried out, targeting places where DNP may be sold, such as gyms.

Following these actions, cases of systemic DNP poisoning reported to the NPIS declined from 35 (six fatal) in 2015 to 12 (two fatal) in 2017. However, it is of concern that this downward trend has not been maintained recently, with numbers of cases reported to NPIS in telephone enquiries recently increasing, accompanied by increased accesses to the DNP pages on TOXBASE by health professionals (Figure 6.4.1).

Deaths from DNP poisoning, although uncommon, continue to occur, with two fatalities reported to the NPIS in 2017 and three in the first quarter of 2018. At the time of publication NPIS is aware of two further deaths in the second quarter of 2018. In total 19 people with suspected DNP exposure who were referred to the NPIS between January 2007 and June 2018 are known to have died.

Not all DNP-related deaths will be referred to the NPIS because some people die without a health professional being involved or because the health professional does not seek NPIS advice. The FSA are aware of four DNP-related fatalities that were not referred to the NPIS, while the Office for National Statistics (ONS) has published data indicating that there have been at least 2 deaths where DNP was mentioned on the death certificate that are not amongst those known to the NPIS or FSA.[5] It is not possible to be more precise as the ONS data are limited to England and Wales and the

[5] Office for National Statistics 2017. Number of deaths where dinitrophenol (DNP) was mentioned on the death certificate, England and Wales, 2007 to 2016. https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/adhocs/007648numberofdeathswheredinitrophenoldnpwasmentionedonthedeathcertificateenglandandwales2007to2016

period 2007 to 2016. Taken together these sources indicate that there have been at least 25 DNP-related deaths in the UK between January 2007 and June 2018.

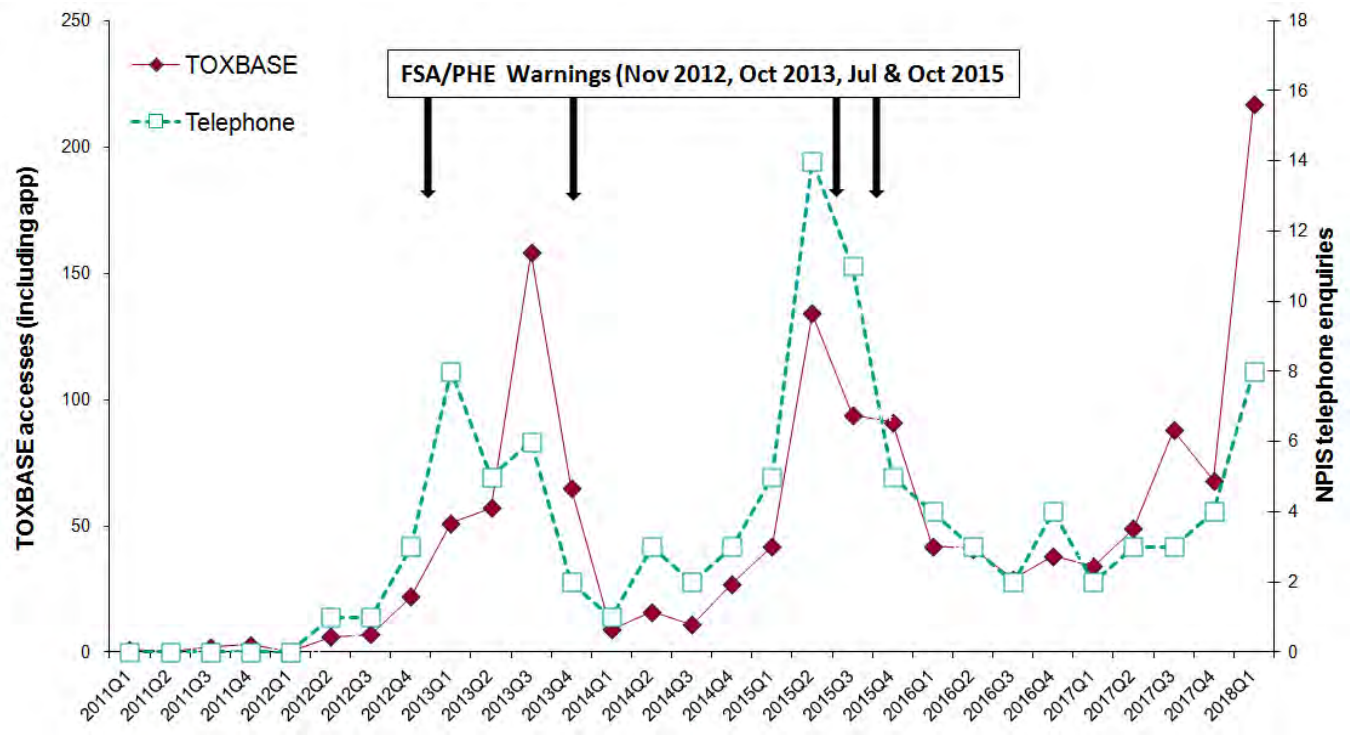

Figure 6.4.1 Quarterly numbers of NPIS cases referred by telephone and TOXBASE accesses relating to systemic DNP exposure, 2011-2018

Managing DNP poisoning in emergency departments can be very challenging. This is an uncommon form of poisoning and healthcare professionals are unlikely to have experience of it. There is no specific antidote and patients commonly deteriorate rapidly. Management guidance is available on TOXBASE and this has advised that all cases should be discussed directly with the NPIS because of the high risk of fatality. This guidance has recently been updated to further emphasise the importance of early aggressive management of complications such as agitation, fever and convulsions.

In view of the recent upward trend in enquiry numbers and further reported deaths, it is also essential that responsible government agencies consider what additional actions could be taken to further protect public health and reduce availability and use of this highly toxic substance.

6.5 Snake bite

The common adder, *Vipera berus*, is the only native venomous snake found in the UK. Its bite is uncommon but may result in serious toxicity, with an estimated 50 to 100

cases each year, with 30-50% showing marked signs of envenoming requiring treatment with an antivenom. Since 2014, a Welsh-made antivenom called ViperaTAb has been used for moderate-severe *V. berus* envenoming across the UK.

For the last two years, the NPIS has been auditing all cases of adder bite reported to the service that potentially required antivenom. One consultant follows up calls, speaking to the clinicians caring for the patient, advising on management of these uncommon cases and learning about the use of this antivenom.

Over the last two adder seasons (typically March/April to September, when the snakes have left their winter burrows), 61 patients were identified as requiring antivenom. Cases had a predominantly coastal region distribution with geographical clusters in the North West and South Wales, East Anglia, and Dorset. The median age of patients was 38 years with a modest male excess. Fourteen children, six aged between three and four years, received antivenom.

All patients presented with localized swelling of the affected limb while 12 also showed signs of general venom effects such as vomiting, swollen lips and tongue or low blood pressure. Most patients arrived in hospital within two hours, but a few delayed their presentation and nine cases presented to hospital more than 12 hours after the bite. Four arrived too late to receive the antivenom that would have helped them if they had got to hospital earlier.

Forty-eight (79%) patients received a single dose of antivenom while 13 needed one or two additional doses due to signs of continuing venom effects. There were only three reported mild adverse reactions amongst the 76 administered doses of antivenom. The median length of stay was a little under two days for both adults and children; a few adults remained in hospital for up to eight days due to widespread bruising and swelling of their limbs.

The audit suggested that administration of antivenom occurred soon after presentation to hospital, but a few patients did not appreciate the urgency required and did not present to hospital quickly enough. A press release was therefore published in July 2017, encouraging people to attend hospital as soon as possible after a bite so that they would gain the greatest benefit from the antivenom. It was reported widely in national print media and radio. The effects of this press release are currently being monitored. The audit also indicated that the clinicians caring for the patients appreciated the opportunity to discuss the care of these uncommon patients with an NPIS consultant, likely producing benefits for patients.

6.6 Oral anticoagulants

Patients with a venous thromboembolism or at an increased risk of stroke from cardiac arrhythmia, especially atrial fibrillation, may require long-term treatment with an anticoagulant. Previously anticoagulation has been achieved using medicines which antagonise vitamin K-dependent clotting factors, such as warfarin. Warfarin use is complicated by its narrow therapeutic range, extensive drug interactions and a requirement for routine monitoring with blood tests. In overdose, however, the antidote vitamin K is available to reverse their effects. Recently, the use of directly-acting anticoagulants (DOACs, e.g. apixaban, dabigatran, edoxaban and rivaroxaban) has been increasing. These do not require regular drug monitoring, although antidotes are not readily available for all in the event of overdose.

This year saw an increase in the numbers of NPIS telephone enquiries received about oral anticoagulants (438 this year, compared with 410 in 2016/2017). This arose because the increase in enquiries about DOACs (325 this year, from 286 in 2016/2017) exceeded the fall in enquiries about warfarin (103 this year, from 124 in 2016/2017) (Figure 6.6.1). Enquiries concerning DOACs are now more than three times as common as those involving warfarin. Enquiries concerning rivaroxaban and apixaban are received more commonly than those involving dagibatran and edoxaban (Figure 6.6.2) and may reflect prescribing practice.

Most enquiries concerned patients who were asymptomatic, but there is a risk of adverse health outcomes so the NPIS will continue to monitor the pattern of enquiries concerning oral anticoagulants.

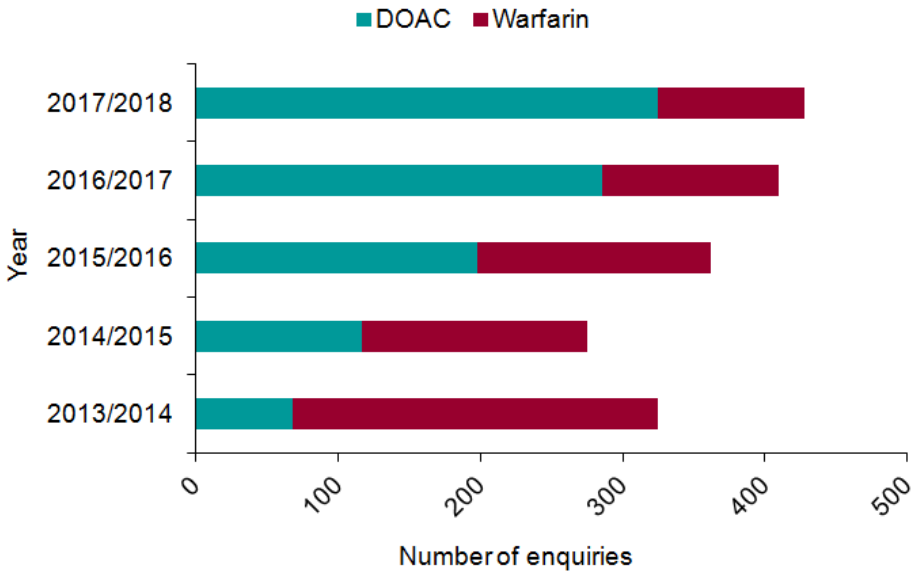

Figure 6.6.1 NPIS telephone enquiries about anticoagulants

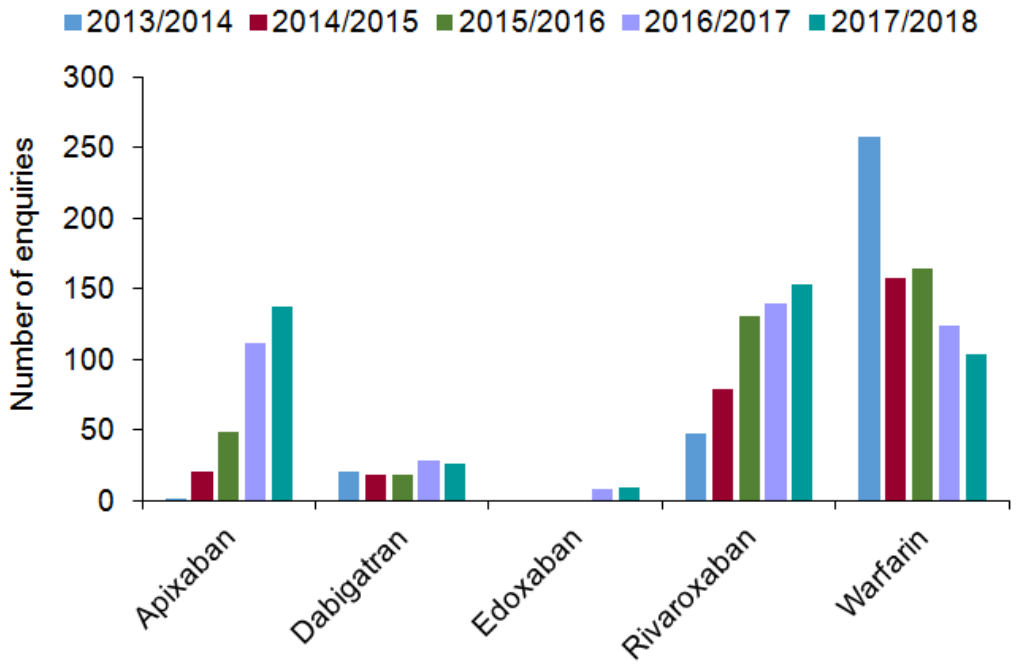

Figure 6.6.2 NPIS telephone enquiries about directly-acting anticoagulants

6.7 Poisoning-related deaths

Enquiries regarding severe cases of poisoning and cases of particular interest may be followed up by the NPIS to determine the progress and outcome of the patient. Cases where the patient was alive at the time of an initial enquiry but subsequently died were checked and reviewed. Where several enquiries clearly related to one patient, these were combined.

A total of 95 telephone enquiries relating to 91 patients known to have died were received during 2017/18. All of these enquiries were made by hospital doctors. Seventy-four of the exposures occurred at home, nine in a public area, one whilst in a psychiatric hospital and seven in a different or unknown location. There were 37 cases involving males and 54 involving females. The actual number of patients who died following a telephone enquiry to the NPIS may be greater as not all telephone enquiries are followed up due to resource limitations. The ages of the patients involved are shown in Figure 6.7.1.

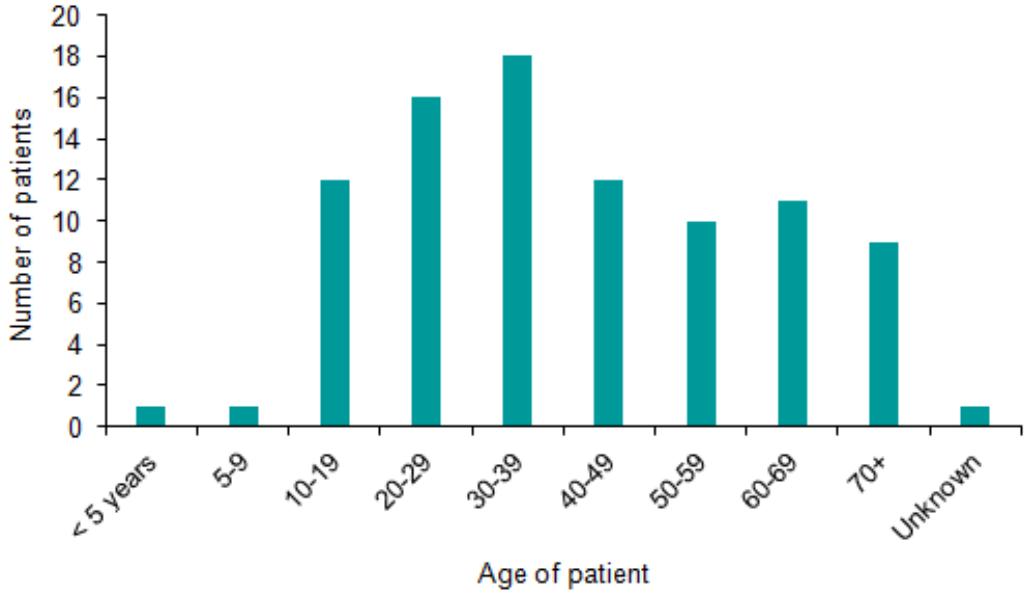

Figure 6.7.1 Age of patients known to have died

In 50 cases a single named agent was thought to have been taken. In 27 cases multiple agents were involved; in three cases the patient had been exposed to fire/smoke and in 11 cases the agent was unknown. Where a single named agent was identified in more than one patient the numbers involved were MDMA/ecstasy (7), digoxin (5), verapamil (4), propranolol (3), dinitrophenol (3), and amitriptyline (2), amlodipine(2), ethylene glycol (2), paracetamol (2) and sulphuric acid (2).

Most exposures involved ingestion (133 substances ingested). Eight substances were inhaled or sniffed and four were injected intravenously or subcutaneously. Exposures were recorded as intentional (39), recreational abuse (18) accidental (7), and adverse drug reaction or therapeutic error (4). In 23 enquiries the circumstances of exposure were not known.

At the time of the initial enquiry almost all (88) patients already had severe features (PSS 3) and the remaining three had moderate features (PSS 2) (PSS – see page 11).

These data show that only a very small proportion of patients referred to the NPIS are known to have had a fatal outcome and demonstrate those substances most likely to be involved. It should be noted that the NPIS may not be aware of all deaths, in spite of efforts to obtain clinical outcomes in those with severe poisoning.

7. Conclusions

The NPIS continues to provide information and advice to health professionals across the NHS about the management of poisoning and suspected poisoning on a 24-hour basis, while UKTIS has maintained its role in provision of advice about drug and chemical exposures in women who are pregnant. The longer term trend for information to be provided via our online platforms has been maintained, with a reduction in the numbers of telephone enquiries received, although the complexity of these enquiries has increased. Managing telephone enquiry numbers is essential to ensure that the service is not overwhelmed and that health professionals can get timely advice when they are managing complex or severe cases, especially considering the recent reductions in NPIS staff numbers.

Overall the amount and impact of advice provided by the NPIS and UKTIS has been increasing, assisted by new developments such as the TOXBASE app and the openly accessible information about drug exposures in pregnancy on the UKTIS and ***bumps*** websites. With their expanding use, it is increasingly important to maintain these various digital platforms, ensuring that these are accurate, evidence-based and up to date. This has been achieved for the 2017/18 reporting period.

Delivering the work of the NPIS and UKTIS is becoming increasingly challenging with the current decline in real terms funding and consequent reduction in staffing. Nevertheless, feedback continues to show outstanding satisfaction with all the various services and platforms provided. This reflects the continuing commitment and hard work of all our staff.

8. Recommendations

Outcome of Recommendations for NPIS in 2017/18

Continue to re-evaluate the best use of resources to allow us to maintain key NPIS functions including the 24-hour telephone rota and the TOXBASE database, in the light of reducing funding and staff numbers.
Outcome: The NPIS has reviewed its funding position and developed plans for provision of the best possible services in the face of reductions in real term resources.

Explore and establish staff rotas that allow increased integration of out-of-hours working between units.
Outcome: The NPIS has reworked rotas between units to increase flexibility and reduce as far as possible the risk of rotas being unstaffed.

Develop improved opportunities for continuous professional development of staff through the two-day CPD format and by enhanced distance learning opportunities.
Outcome: The two day distance-learning format has been established and work is ongoing to make learning material as accessible as possible for staff unable to attend on the day.

Maintain data collection for current externally-funded surveillance projects and continue to seek further external income to support the integrity of the current service.
Outcome: These projects have been maintained according to the agreements with funding organisations.

Publish data on the impact of the Psychoactive Substances Act 2016 on NPIS activity relating to drugs of misuse.
Outcome: Further data are published in this annual report and information has also been provided to the Home Office for its review of the impact of the Act.

Recommendations for NPIS in 2018/19

Continue to re-evaluate service priorities for short and longer-term allocation of increasingly limited resources.

Update NPIS protocols for managing cases of unusual poisoning, especially those where there may be a wider public health risk, with the aim of improving response and fostering better collaborative working with other agencies.

Maintain current externally-funded surveillance projects and continue to seek further external income to support the integrity of the current service.

Continue to monitor episodes of poisoning of public health importance, reporting to responsible government agencies as appropriate.

APPENDIX A Senior NPIS staff

NPIS Consultants and Senior Staff

NPIS Birmingham

Dr S M Bradberry BSc MD FRCP FAACT FEAPCCT
Director, NPIS Birmingham and West Midlands Poisons Unit, City Hospital, Birmingham and Alcohol Lead, Sandwell and West Birmingham NHS Trust, Birmingham

Dr MEMO Elamin MBBS, DMT&H, MRCP, PgCert ClinEd, MSc(Med Tox)
Consultant Clinical Toxicologist, NPIS Birmingham and West Midlands Poisons Unit, Birmingham City Hospital

Mr A Campbell BSc MSc DipMedTox FEAPCCT FAACT
Manager, NPIS Birmingham

Professor J A Vale MD FRCP FRCPE FRCPG FFOM FAACT FBTS FBPhS FEAPCCT Hon FRCPSG
Consultant Clinical Pharmacologist and Toxicologist, NPIS Birmingham, City Hospital, Birmingham; Honorary Professor, University of Birmingham

NPIS Cardiff

Mrs G L Alldridge MBE
Senior Information Services Manager, NPIS Cardiff

Dr J Coulson BSc MBBCh LLM MD FRCP DipMedTox DipTher GCGI FRCPE ERT
Senior Lecturer in Clinical Pharmacology, Centre for Medical Education, Cardiff University and Honorary Consultant, Cardiff and Vale University Health Board

Dr L A Gray MBBCh MRCP
Consultant Physician in Clinical Pharmacology and Therapeutics, Cardiff and Vale University Health Board

Dr A Thomas MBChB FRCP DipMedTox, DipTher
Senior Lecturer in Clinical Pharmacology, Centre for Medical Education, Cardiff University and Honorary Consultant, Cardiff and Vale University Health Board

Dr J P Thompson BMedSci MBChB FRCP FBTS FEAPCCT FBPhS
Director, NPIS Cardiff; Senior Lecturer in Clinical Pharmacology, Centre for Medical Education, Cardiff University and Honorary Consultant, Cardiff and Vale University Health Board

NPIS Edinburgh

Dr J W Dear PhD FRCPE
Reader in Clinical Pharmacology and Honorary Consultant Clinical Toxicologist, University of Edinburgh and NHS Lothian

Professor M Eddleston ScD FRCPE FEAPCCT
Professor of Clinical Toxicology, University of Edinburgh; Consultant Clinical Toxicologist, NPIS Edinburgh and Royal Infirmary of Edinburgh

Dr G Jackson BSc DipMedTox PhD
Information Services Manager, NPIS Edinburgh

Dr E A Sandilands BSc MD FRCP Edin
Director, NPIS Edinburgh; Consultant Physician and Clinical Toxicologist, Royal Infirmary of Edinburgh; Honorary Senior Clinical Lecturer, University of Edinburgh

Dr A Veiraiah MB BS MRCP
Consultant in Acute Medicine and Toxicology, Royal Infirmary of Edinburgh

NPIS Newcastle (including UKTIS)

Mrs S Bradley BSc MSc
Information Services Manager, NPIS Newcastle

Dr S L Hill BSc MBBS MRCP
Consultant Physician and Clinical Toxicologist, Newcastle upon Tyne Hospitals NHS Foundation Trust; Honorary Clinical Senior Lecturer, Institute of Cellular Medicine, Newcastle University

Dr S Stephens BSc PhD
Assistant Head of Teratology, UK Teratology Information Service, Newcastle upon Tyne Hospitals NHS Foundation Trust; Honorary Associate Fellow, Institute of Cellular Medicine, Newcastle University

Dr H K R Thanacoody MD FRCP FRCPE
Consultant Physician and Clinical Toxicologist, Newcastle upon Tyne Hospitals NHS Foundation Trust; Honorary Senior Clinical Lecturer, Institute of Cellular Medicine, Newcastle University

Professor S H L Thomas BSc MD FRCP FRCPE FEAPCCT FAACT
Director, NPIS Newcastle and UKTIS; Chair, NPIS Clinical Standards Group; Consultant Physician, Newcastle upon Tyne Hospitals NHS Foundation Trust; Professor of Clinical Pharmacology and Therapeutics, Newcastle University

Dr L M Yates MBChB PhD DRCOG MRCPCH
Head of Teratology, UKTIS; Consultant in Clinical Genetics, Institute of Genetic Medicine, Newcastle upon Tyne Hospitals NHS Foundation Trust; Honorary Senior Clinical Lecturer, Institute of Genetic Medicine, Newcastle University

Other consultants providing on-call support for the NPIS

Professor P I Dargan FRCPE FACMT FRCP FAACT FEAPCCT FBPhS
Consultant Physician and Clinical Toxicologist, Clinical Director, Guy's and St Thomas' NHS Foundation Trust, and King's Health Partners, London; Professor of Clinical Toxicology, King's College London, London

Dr W S Waring BMedSci MB PhD FRCPE FRCP FBPhS
Consultant Physician in Acute Medicine and Clinical Toxicology, York Teaching Hospitals NHS Foundation Trust; Honorary Senior Lecturer in Medicine, Hull York Medical School, York

Dr D M Wood MD FRCP FEAPCCT FACMT FBPhS
Consultant Physician and Clinical Toxicologist and Service (clinical) Lead for Medicine, Guy's and St Thomas' NHS Foundation Trust and King's Health Partners, London; Honorary Senior Lecturer, King's College London, London

Consultants providing specialist support for the NPIS

Dr M Anderson BSc BMedSci BMBS MRCPCH
Consultant Paediatrician, Great North Children's Hospital, Newcastle upon Tyne Hospitals NHS Foundation Trust

Dr J M Wraight MBChB MSc FCEM DipMedTox
Consultant Emergency Physician with Toxicology, St John's Hospital, Livingston and Royal Infirmary of Edinburgh

National and international appointments of NPIS senior staff

NPIS staff have roles in supporting many important aspects of toxicology, both nationally and internationally. These include advisory roles to international and national bodies, including government, as well as academic activities. The range of their roles presented below provides a flavour of these activities and indicates the wider 'added value' of the NPIS.

NPIS Birmingham

Dr S M Bradberry

INTERNATIONAL SOCIETIES

Fellow: American Academy of Clinical Toxicology
Fellow: European Association of Poisons Centres and Clinical Toxicologists

UK ADVISORY COMMITTEES

Member: MHRA Orthopaedic Expert Advisory Group
Member: PHE Lead exposure in children surveillance system steering group

ACADEMIC ACTIVITIES
Honorary Senior Lecturer: School of Biosciences, University of Birmingham
Joint Course Organiser: MSc (Toxicology), University of Birmingham
Educational and Clinical Supervisor: Sandwell and West Birmingham Hospitals NHS Trust

Mr A Campbell
INTERNATIONAL ACTIVITIES
Past-President: European Association of Poisons Centres and Clinical Toxicologists (EAPCCT)
Member: Scientific and Meetings Committee (EAPCCT)
Member: Finance Committee (EAPCCT)
Member: Communications Committee (EAPCCT)
Chair: Nomination Committee (EAPCCT)
Chair: Education Committee (EAPCCT)
Member: Contracts Working Group (EAPCCT)
UK ADVISORY COMMITTEES
Member: British Small Animal Veterinary Association (BSAVA) Petsavers Grants Award Committee

Dr MEMO Elamin
INTERNATIONAL SOCIETIES
Co-Chair: Abstract Review Committee, MENATOX (Middle East & North Africa Clinical Toxicology Association)

Professor J A Vale
INTERNATIONAL ACTIVITIES
Member: Advisory Board Hong Kong Poisons Centre
INTERNATIONAL JOURNALS
Reviews Editor: Clinical Toxicology
UK ADVISORY COMMITTEES
Council Member: Fellowship of Postgraduate Medicine
ACADEMIC ACTIVITIES
Joint Course Organiser: MSc (Toxicology), University of Birmingham
Examiner: MRCP(UK) Part 2 Clinical Examination (PACES)

NPIS Cardiff

Dr J Coulson
INTERNATIONAL ACTIVITIES
Consultancy in Clinical Toxicology to WHO
UK ADVISORY COMMITTEES
Member: Committee on Toxicity
Co-opted member: Tramadol subcommittee to the Advisory Panel on Substance Misuse

NHS NATIONAL AND REGIONAL COMMITTEES
Member: All Wales Medicines Strategy Group
ACADEMIC ACTIVITIES
Clinical Senior Lecturer: Cardiff University
Visiting Lecturer: Birmingham University

Dr L A Gray
NHS NATIONAL AND REGIONAL COMMITTEES
Member: All Wales Prescribing Advisory Group (AWPAG) for All Wales Medicine Strategy Group
Member: New Medicines Group for All Wales Medicine Strategy Group

Dr A Thomas
NHS NATIONAL AND REGIONAL COMMITTEES
Medical Director: Yellow Card Centre Wales
Member: New Medicines Group, All-Wales Medicines Strategy Committee
Member: All-Wales Specialist Training Committee in Clinical Pharmacology
ACADEMIC ACTIVITIES
Theme Lead: BDS Human Disease Course, Cardiff University
Member: Programme Management Committee, Certificate/Diploma/MSc in Medical Toxicology, Cardiff University
Member: Programme Management Committee, Certificate/Diploma in Therapeutics, Cardiff University
Member: Final Year Exam Executive, Cardiff University

Dr J P Thompson
INTERNATIONAL ACTIVITIES
Member: Advisory Board Hong Kong Poisons Centre
Consultant: WHO Collaborating Centre for Chemical Incidents
Member: TAIEX Panel of Experts for European Commission
UK ADVISORY COMMITTEES
Member: Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment (COT)
Senior Medical Officer: Yellow Card Centre (Wales)
NHS NATIONAL AND REGIONAL COMMITTEES
Member: Executive Committee, British Toxicology Society
Chair: Human Toxicology Section, British Toxicology Society
Honorary Secretary: Joint Specialty Committee, Clinical Pharmacology and Therapeutics
Member: New Medicines Group, All-Wales Medicines Strategy Committee
Member: All-Wales Specialist Training Committee in Clinical Pharmacology
Member: New Medicines Group for All Wales Medicines Strategy Group

ACADEMIC ACTIVITIES
Member: Programme Management Committee Certificate/Diploma/MSc in Medical Toxicology; Therapeutics; and Occupational Health, Policy and Practice, Cardiff University
Theme Lead: Prescribing and Therapeutics Education, School of Medicine, Cardiff University

NPIS Edinburgh

Dr J Dear
INTERNATIONAL ACTIVITIES
Member: EMA Scientific Advisory Group on Paracetamol
INTERNATIONAL SOCIETIES
Chair: BPS Toxicology Group
NHS NATIONAL AND REGIONAL COMMITTEES
Deputy Director: Yellow Card Centre, Scotland
Member: Lothian Formulary Committee
Member: British Pharmacological Society Clinical Section Committee
ACADEMIC ACTIVITIES
External Examiner: BSc Clinical Pharmacology, Kings College, London
External Examiner: MSc/Diploma in Medical Toxicology, Cardiff University

Professor M Eddleston
INTERNATIONAL ACTIVITIES
Member: WHO Expert Advisory Group for the FAO and WHO Joint Meeting on Pesticide Management
Member: FAO Temporary Working Group on Fall Army Worm. Synthetic chemical pesticides.
Advisor: World Health Organization/Department of Evidence and Policy on Environmental Health
INTERNATIONAL SOCIETIES
Scientific Committee Member: EAPCCT
Board Member: APAMT
INTERNATIONAL JOURNALS
Editorial Board Member: Clinical Toxicology
UK ADVISORY COMMITTEES
Member: UK Department of Health Committee on Antivenoms
NHS NATIONAL AND REGIONAL COMMITTEES
Member: Scottish Commission on Medicines

Dr E A Sandilands
UK ADVISORY COMMITTEES
Advisor: Consortium of Local Education Authorities for the Provision of Science in Schools (CLEAPSS)
Advisor: Scottish Schools Education and Research Centre (SSERC)

NHS NATIONAL AND REGIONAL COMMITTEES
Member: Lothian Drug and Therapeutics Committee
ACADEMIC ACTIVITIES
MBChB Year 6 Medicine Module Organiser: University of Edinburgh

Dr A Veiraiah
NHS NATIONAL AND REGIONAL COMMITTEES
Medical Lead: SPSP Medicines
ACADEMIC ACTIVITIES
Lothian QI Academy Coach

NPIS Newcastle (including UKTIS)

Dr S Hill
NHS NATIONAL AND REGIONAL COMMITTEES
Member: UK Focal Point Early Warning System on New Psychoactive Substances
Member and Curriculum Lead: Specialist Advisory Committee, Clinical Pharmacology and Therapeutics, Northern Deanery Representative
Member: MRCP Part 1 and 2 Specialty Question Writing Group
ACADEMIC ACTIVITIES
Strand Lead: Masters in Clinical and Health Sciences with Therapeutics, Newcastle University
Module Lead: Masters in Clinical and Health Sciences with Therapeutics - Drug Discovery and Pre-clinical Development, Newcastle University
Module Lead: Drug Discovery and Development, Masters by Research in Translational Medicine, Newcastle University
Training Programme Director and SAC Representative: Clinical Pharmacology and Therapeutics, HEE North East
Member: Clinical Pharmacology and Therapeutics STC (HEE North East)
Member: Acute Medicine STC/DWDN Lead (HEE North East)
Educational Supervisor: PHE Funded Advanced Fellowship in Clinical Toxicology
Site Lead: Foundations of Clinical Practice, MBBS stage 3, Royal Victoria Infirmary, Tyne base unit, Newcastle University

Dr H K R Thanacoody
UK ADVISORY COMMITTEES
Member: Pharmacovigilance Expert Advisory Group, Medicines and Healthcare Products Regulatory Agency
ACADEMIC ACTIVITIES
Member: Joint Royal Colleges MRCP (Part 1) Examining Board
Module Leader: Experimental Medicine and Therapeutics, MRes in Translational Medicine, Newcastle University
Course Director: Clinical Pharmacology Therapeutics and Prescribing, MBBS, Newcastle University

Professor S H L Thomas

INTERNATIONAL ACTIVITIES

Expert Panel Member: European Medicines Agency

INTERNATIONAL JOURNALS

Deputy Editor: Clinical Toxicology

UK ADVISORY COMMITTEES

Member: Advisory Council on the Misuse of Drugs

Member: Technical Committee, Advisory Council on the Misuse of Drugs

Member: Advisory Council on the Misuse of Drugs Novel Psychoactive Substances working group.

Member: Ministry of Defence Advisory Group on Military and Emergency Response Medicine

NHS NATIONAL AND REGIONAL COMMITTEES

Director: Yellow Card Centre (Northern and Yorkshire)

Medical Director: Regional Drug and Therapeutics Centre, Newcastle

Member: Northern Treatment Advisory Group

Member: Northern Regional Medicines Optimisation Committee

Member: North of Tyne Area Prescribing Committee

Chair: North of Tyne Area Prescribing Committee, Formulary Subcommittee

ACADEMIC ACTIVITIES

Strand Leader: MRes in Translational Medicine and Therapeutics, Newcastle University

Regional Speciality Advisor (North East), Clinical Pharmacology and Therapeutics

Dr L Yates

INTERNATIONAL ACTIVITIES

President: European Network of Teratology Information Services (ENTIS)

Chair: Working Group 2: Independence and Transparency, European Medicines Agency (EMA) - European Network of Centres for Pharmacoepidemiology and Pharmacovigilance (ENCePP)

Chair: Pregnancy Special Interest Group, (EMA-ENCePP)

INTERNATIONAL SOCIETIES

President: European Network of Teratology Information Services (ENTIS)

UK ADVISORY COMMITTEES

Member: Expert Advisory Committee, Medicines and Healthcare Products Regulatory Agency (MHRA)

Member: Valproate Stakeholders Network (MHRA)

ACADEMIC ACTIVITIES

Steering Committee Member: Neurodevelopment of Babies born to Mother’s with Epilepsy (NaME) Study,

Trial Management Group Member: EMPOWER: Emesis in Pregnancy - Ondansetron With mEtoclopRamide Study

Other consultants providing on-call support for the NPIS

Professor P I Dargan

INTERNATIONAL ACTIVITIES

Member: European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) Scientific Committee
Board Member: European Association of Poison Centres and Clinical Toxicologists
Chair: European Association of Poison Centres and Clinical Toxicologists Scientific Committee
Member: American College of Medical Toxicology International Committee
Abstract Reviewer: American Academy of Clinical Toxicology
Expert Adviser: World Health Organization
Member: GSK Global Analgesics Panel
Member: WHO/UN Global Alliance to Eliminate Lead from Paint
Member: WHO Global Burden of Disease Expert Panel

INTERNATIONAL JOURNALS

Senior Editorial Board Member: Clinical Toxicology
Editorial Board Member: Toxicologie Analytique et Clinique

UK ADVISORY COMMITTEES

Member: Advisory Council on Misuse of Drugs
Member: Technical Committee, Advisory Council on Misuse of Drugs
Co-chair: College of Emergency Medicine Antidote Guideline Group

ACADEMIC ACTIVITIES

Member: Faculty of Translational Medicine, Biomedical Research Centre (BRC) at Guy's and St Thomas' NHS Foundation Trust and King's College London
Member: London Ambulance Service Clinical Audit and Research Steering Group
Examiner: MRCP (UK) Part 2 Clinical Examination (PACES)
External Examiner: University of Sydney PhD
Member: WHO Global Burden of Disease Expert Panel

Dr W S Waring

INTERNATIONAL JOURNALS

Associate Editor: Therapeutic Advances in Drug Safety
Editorial Board Member: European Journal of Clinical Pharmacology
Editorial Board Member: Expert Review of Clinical Pharmacology
Editorial Board Member: Recent Patents on Cardiovascular Drug Discovery

UK ADVISORY COMMITTEES

Member: Independent Review Panel for Borderline Products, Medicines and Healthcare Products Regulatory Agency

NHS NATIONAL AND REGIONAL COMMITTEES

Regional Specialty Advisor: Clinical Pharmacology and Therapeutics
Member: Regional RCP Advisory Appointments Committee
CPT Representative: RCP Revalidation Specialty Advisory Group

Clinical Examiner: PACES, Royal College of Physicians of Edinburgh
Member: Regional Training Committee for Acute Medicine

ACADEMIC ACTIVITIES

Honorary Senior Lecturer: Hull York Medical School

Dr D M Wood

INTERNATIONAL ACTIVITIES

Expert Advisor: European Monitoring Centre for Drugs and Drug Addiction (EMCDDA)
Member: American Academy of Clinical Toxicology Scientific Review Committee
Expert Advisor: United Nations Office on Drugs and Crime (UNODC)
Expert Advisor: World Health Organisation

INTERNATIONAL JOURNALS

Editorial Board Member: Journal of Medical Toxicology
International Scientific Committee Member: Toxicologie Analytique et Clinique

UK ADVISORY COMMITTEES

Co-opted Member: UK Advisory Council on the Misuse of Drugs (ACMD) Technical and Novel Psychoactive Working Groups
Member: Scientific advisory group on the Health Foundation Funded ‘Project Neptune’
Member: Advisory Board of the Angelus Foundation, now part of Mentor UK

NHS NATIONAL AND REGIONAL COMMITTEES

Member: Department of Health Early Warning System
Member: Public Health England National Drugs Intelligence Network

ACADEMIC ACTIVITIES

Joint Project Co-ordinator: European Drug Emergencies Network (Euro-DEN) Plus project
Lecturer: NPIS/RCEM Clinical Toxicology Training Days
Lecturer: NPIS Cardiff Update in Medical Toxicology course
Royal College of Physicians (RCP) representative: Royal College of Pathology (RCPath) Specialty Advisory Committee on Toxicology

APPENDIX B NPIS publications in 2017/18

62 contributions to the scientific literature were published in 2017/18 by NPIS staff*

* NPIS staff are given in **bold** type
# early online publication details for these publications were previously listed in the 2016/17 NPIS report

Peer-reviewed papers

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