



ANNUAL REPORT 2016

Victorian **P**oisons **I**nformation **C**entre

13 11 26

**Emergency Department
Austin Hospital
Heidelberg 3084**

www.austin.org.au/poisons

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Introduction

The Victorian Poisons Information Centre (VPIC) commenced operation in 1962. It was located at the Royal Children's Hospital, Melbourne from 1976 to 2008. In August 2008, the centre moved to the Austin Hospital, to co-locate and integrate with the Austin Hospital Clinical Toxicology Service (AHCTS). VPIC is located in the Austin Hospital Emergency Department, and is directed administratively as part of the Austin Hospital Pharmacy Department.

VPIC provides members of the Victorian public with:

- risk assessment, first aid, and management advice in the event of poisoning or suspected poisoning involving: accidental/unintentional exposures that include therapeutic errors and occupational workplace exposures; deliberate self poisonings; envenomations; toxic hazard situations
- advice regarding the need for medical assessment
- information, advice and resources about prevention of poisoning
- referral to other information sources or agencies if appropriate
- selected drug information.

VPIC provides health professionals with:

- a risk assessment in the event of poisoning or suspected poisoning involving: accidental/unintentional exposures that include therapeutic errors and occupational workplace exposures; deliberate self poisonings; envenomations; toxic hazard situations
- information about the potential toxic effects from an exposure
- initial and ongoing management advice
- information on formulation of products
- referral to other information sources or agencies if appropriate
- referral to a member of the supporting medical toxicology team (registrar, fellow or consultant) for complicated and/or severe cases, following agreed escalation protocols
- information and data about trends in poisonings (toxicovigilance).

VPIC aims to prevent unnecessary visits to general practitioners and hospitals and unnecessary ambulance callouts, and to ensure patients who are poisoned or envenomed receive the most appropriate treatment promptly.

The VPIC telephone number is **13 11 26**. This number can be used Australia-wide for the cost of a local call (excluding mobile phones).

Hours of Operation

VPIC operates Monday to Friday (0800 to 2130 hours), and Saturday and Sunday (0800 to 2100 hours), ie 93.5 hours per week. Outside these times, calls are diverted to the New South Wales (NSW) Poisons Information Centre. Overnight shifts (12 midnight to 0600 hours) are shared between the four Australian PICs (NSW, Queensland, Western Australia and Victoria). Only one PIC operates overnight, taking all the calls from across Australia while the other three PICs are closed. VPIC currently works the overnight shifts every Tuesday and every second Sunday, plus the occasional additional shift that other PICs cannot accommodate.

Personnel

Director of Austin Health Pharmacy and the VPIC

Kent Garrett B. Pharm., Grad. Dip. Hosp. Pharm.

Manager, VPIC

Jeff Robinson B. Pharm., FSHP, Grad. Dip. Hosp. Pharm.

Medical Director of VPIC

Dr Shaun Greene MB ChB, MSc (Medical Toxicology), FACEM

Specialists in Poisons Information (SPIs)

Janet Browning B. Pharm., Dip. Hosp. Pharm.

Mark Colbridge B. Sc (Hons)

Dr Dawson MacLeod B. Pharm., Grad. Dip. Biotech., Grad. Cert. Clin. Tox., PhD

Hamish McCracken B. Pharm., Grad. Dip. Psych.

Christine McKenzie B. Pharm., Grad. Cert. E-Health Comm., Grad. Cert. Clin. Tox.

Jeff Robinson B. Pharm., FSHP, Grad. Dip. Hosp. Pharm.

Toxicology Fellow in Training

Dr Yit Leang MB BS, FACEM

On-Call Clinical Toxicologists

The following clinical toxicologists shared the VPIC on-call responsibilities during 2016:

Professor George Braitberg MB BS, FACEM, FACMT, Dip Epi Biostats (Melbourne Health)

Dr. Dino Druda B. Med. Sc (Hons), MB BS, MRCP (UK), FACEM, Grad. Cert. Clin. Tox. (Monash Health)

Professor Andis Graudins MB BS, PhD, FACEM, FACMT (Monash Health)

Dr Shaun Greene MB ChB, MSc (Medical Toxicology), FACEM (AHCTS)

Dr. Zeff Koutsogiannis MB BS, FACEM, Grad. Cert. Clin. Tox. (AHCTS)

Dr Anselm Wong MB BS, FACEM, Dip. Tox (AHCTS)

AHCTS is comprised of a toxicology registrar (six month rotation) and three toxicology consultants (Dr. Shaun Greene; Dr. Zeff Koutsogiannis; Dr. Anselm Wong). In July 2014, a shared AHCTS/Monash Health on-call toxicology service (VAMPIRE) commenced. Two clinical toxicologists from Monash Health, Professor Andis Graudins and Dr. Dino Druda, joined the AHCTS toxicologists to provide a specialised management and advice service for toxicology/toxinology admissions at Austin Health and Monash Health, and other Victorian hospitals via VPIC call referral. Professor George Braitberg (Melbourne Health – Royal Melbourne Hospital) also participates in the on-call service.

VPIC staff enjoy a close day-to-day working relationship with the AHCTS team. VPIC SPIs have ready access to the toxicology registrar, toxicology fellow or the on-call consultant in complicated and/or severe poisoning cases meeting case escalation criteria. In addition, a range of external consultants (clinical pharmacologists, mycologists and botanists) are available to VPIC staff to provide specialist advice in these areas if needed.

Additionally, Drs. Greene, Koutsogiannis, Druda, Wong and Professor Graudins continued their participation in the national toxicology on-call roster.

Clinical Governance Activities

Clinical governance has been defined as the framework through which health care organisations are accountable for continuously improving the quality of their services and safeguarding high standards of care by creating an environment in which excellence in clinical care will flourish.

The following clinical governance activities were undertaken during 2016:

- Internal review of all VPIC calls by a second VPIC staff member.
- Review of all VPIC potentially 'critical incident' calls by the Toxicology Registrar, ie all calls received from hospitals, general practitioners and ambulances. The Registrar provides feedback as appropriate, and the call review forms part of the Registrar's training.
- Reports of all shared-service cases and VPIC calls referred to the registrar, fellow or on-call toxicologist were emailed to VPIC, AHCTS and Monash Health Toxicology staff, with follow-up reports if appropriate.
- Next day follow-up of any Victorian cases that were referred to the national roster toxicologist overnight. If appropriate, follow-up reports of these cases were emailed to VPIC, AHCTS, Monash Health Toxicology staff and the national toxicology/PIC email distribution list.
- Ongoing involvement in regular VPIC/AHCTS educational activities, eg monthly Global Educational Toxicology Uniting Project (GETUP) videoconferencing with the PICs in Fiji and Fresno, California; a half-day Toxicology Forum; Austin Hospital Grand Rounds; case discussions including morbidity and mortality review, teaching sessions and Toxicology Journal Club held every Wednesday.
- Ongoing review of VPIC/AHCTS policies, procedures, protocols, clinical guidelines and position statements. These reviews are performed every two years or earlier if indicated.
- Ongoing broader staff education via attendance at national PIC/Toxicology Clinical Meetings in Brisbane and Sydney and international conference attendances (EAPCCT Conference, Madrid; Asia Pacific Association of Medical Toxicology Conference, Singapore).
- Annual Austin Health Performance Review and Development (PRD) for all VPIC staff.

Poisoning Prevention Activities

The following poisoning prevention activities were undertaken during 2016:

- Printed material (pamphlets, telephone stickers, posters, information sheets) and fridge magnets were supplied to child care centres, kindergartens, local councils, Maternal and Child Health Centres, GP surgeries etc throughout the year.
- In May, Jeff Robinson liaised with the mycologists at the Royal Botanic Gardens, Melbourne and the Media Unit of the Victorian Department of Health and Human Services (DHHS) to release a Chief Health Officer Advisory 'Poisonous mushrooms growing in Melbourne.'
- The bites and stings information on the VPIC website www.austin.org.au/poisons was updated. The website contains: poisoning/envenomation prevention and first aid advice; information sheets for members of the public; links to other resources such as VPIC Annual Reports, the Practice Standards for Australian Poisons Information Centres, Chemical Safety, Drug and Alcohol Services, first aid courses, food poisoning, various Helplines, child safety/injury prevention, lead exposure resources, Occupational Health and Safety.

Toxicovigilance Activities

Toxicovigilance is the active process of identifying and evaluating toxic risks, and evaluating the measures taken to reduce or eliminate them. It involves the analysis of PIC data to identify if there are specific circumstances or agents giving rise to poisoning, or certain populations or locations suffering a higher incidence of poisoning or the need for public education and restrictions on the availability of certain products. Toxicovigilance may lead to PIC safety alerts in cases of sentinel events. Toxicovigilance can also reveal whether there is an emerging

toxicological problem resulting from, for example, the reformulation of a product or a change to its packaging or labelling or the availability of a new drug of abuse.

To support toxicovigilance activities, VPIC has developed collaborative links with: the other Australian PICs; public health agencies such as the Victorian DHHS Environmental Health Unit; the Victorian Institute of Forensic Medicine (VIFM); regulatory authorities such as the Therapeutics Goods Administration (TGA); medication safety bodies; child safety groups, eg Kidsafe, Royal Children's Hospital Safety Centre.

The following toxicovigilance activities were undertaken during 2016:

- VPIC call data pertaining to e-cigarette exposures during 2014 and 2015 was provided to Carol Wylie, Queensland Poisons Information Centre, as part of a national study of this issue.
- VPIC call data pertaining to blue green algae exposures was provided to the Victorian DHHS prior to the March release of a Chief Health Officer Advisory 'Blue Green Algae in Victorian waterways.'
- VPIC call data pertaining to Lye water exposures was provided to Dr. Carolyn Lewis, South Australian Health Department.
- VPIC call data pertaining to mushroom exposures was provided to the Victorian DHHS prior to the May release of a Chief Health Officer Advisory 'Poisonous mushrooms growing in Melbourne.'
- VPIC call data pertaining to paediatric exposures to clonidine, melatonin and tricyclic antidepressants was provided to Millicent Chapman, a pharmacist at Royal Hobart Hospital, for a paediatric sedation and behavioural modification relative risk study.
- In July, a national PIC data collection document for documenting paediatric battery ingestions was developed.
- In November, VPIC call data pertaining to disc/button battery ingestions was provided to Dr Rose Cairns, NSW Poisons Information Centre, as part of an ongoing national PIC toxicovigilance project.
- In December, VPIC Annual reports going back to 2004 were provided to Dr Belinda Cooke, Office of the NSW Chief Scientist and Engineer, to assist in national data compilation on exposures to rodenticides in Australia.
- In December, Jeff Robinson convinced Aldi Supermarkets to withdraw their Super Craft Glue product, which contained methanol 60%. This followed a VPIC case in which an infant ingested an unknown amount of the product. He was monitored in hospital overnight and fortunately did not develop any signs or symptoms of methanol poisoning.

Publications and International Conference Presentations

The following publications and international conference presentations were achieved during 2016:

- Rotella JA, Taylor DM, Wong A, Greene SL. Accuracy of QT interval measurement on electrocardiographs displayed on electronic 'smart' devices. *Emerg Med Australas* 2016; 28(2): 187-92.
- Wong A, Graudins A. Simplification of the standard three-bag intravenous acetylcysteine regimen for paracetamol poisoning results in a lower incidence of adverse drug reactions. *Clin Tox* 2016; 54(2): 115-9.

- Levine M, Hoffman RS, Lavergne V, Stork CM, Graudins A, Chuang R, Stellpflug SJ, Morris M, Miller-Nesbitt A, Gosselin S, for the AACT Lipid Emulsion Workgroup. Systemic review of the effect of intravenous lipid emulsion therapy for non-local anesthetic toxicity. *Clin Tox* 2016; 54(3): 194–221.
- Wong LY, Greene SL, Odell M, Wong K. Severe prolonged posture-evoked tachycardia after massive overdose of paliperidone. *Clin Tox* 2016; 54(6): 535.
- Wong A, Graudins A. N-acetylcysteine regimens for paracetamol overdose: Time for a change? *Emerg Med Australas* 2016 DOI: 10.1111/1742-6723.12610.
- Cairns R, Brown JA, Lynch AM, Robinson J, Wylie C, Buckley NA. A decade of Australian methotrexate dosing errors. *Med J Aust* 2016; 204(10): 384.
- Wong LY, Wong A, Robertson T, Burns K, Roberts M, Isbister GK. Severe hypertension and bradycardia secondary to midodrine overdose. *J Med Toxicol* DOI: 10.1007/s13181-016-0574-4.
- Barton J, Wong A, Graudins A. Anti-Xa activity in Apixaban overdose: a case report. *Clin Tox* 2016; 54(9): 871–3.
- Robinson J, McKenzie C, MacLeod D. Medicinal mishap. Paediatric dosing errors with oral prednisolone mixture. *Aust Prescr* 2016; 39(5): 173.
- Gaber M, Wong A, Koutsogiannis Z, Greene SL. Massive paracetamol overdose associated with mitochondrial dysfunction and pancytopenia, without hepatotoxicity. *Eur J Emerg Med* 2016; 23(6): 460–2.
- Ling S, Taylor D, Robinson J. Workplace chemical and toxin exposures reported to a Poisons Information Centre: a diverse range causing variable morbidity. *Eur J Emerg Med* 2016; DOI: 10.1097/MEJ.0000000000000430.
- Wong A, Stolbach A, Dawson AH, Vohra R. The impact of online toxicology training on Fijian emergency doctors' knowledge: the Global Educational Toxicology Uniting Project (GETUP). *Clin Tox* 2016; DOI: 10.1080/15563650.2016.1253848.
- Kailainathan R, Wong A, Greene S, Koutsogiannis Z. Recognition of gamma-hydroxybutyric acid withdrawal: Rapid progression and prolonged symptomatology. *Emerg Med Australas* 2016 DOI: 10.1111/1742-6723.12721.
- Wong A, MacLeod D, Greene SL. Synthetic cannabinoid receptor agonist (SCRA) toxicity reported to the Victorian Poisons Information Centre. EAPCCT Conference, Madrid, May.
- Marks D, Dines AM, Lipi M, Thapa A, Wood DM, Dargan PI, Greene SL. Clinical outcomes and predictive factors in 'massive' paracetamol overdose. EAPCCT Conference, Madrid, May.
- Wong LY, Wong A, Rozek T, Roberts M, Isbister GK. Severe hypertension and bradycardia secondary to midodrine overdose. EAPCCT Conference, Madrid, May.
- Wong LY, Odell M, Wong K, Greene SL. Severe prolonged tachycardia after massive overdose of paliperidone. EAPCCT Conference, Madrid, May.
- Arbabian H, Graudins A. Digoxin-Fab antibody use in suspected chronic digoxin toxicity in elderly patients with multiple co-morbidities: does it make a difference? EAPCCT Conference, Madrid, May.
- Wong A, Sivilotti ML, Graudins A. Use of the paracetamol-aminotransferase product to predict hepatotoxicity in paracetamol overdose in a population treated with a two bag acetylcysteine regimen. EAPCCT Conference, Madrid, May.
- Wong A, Sivilotti ML, Graudins A. Use of the paracetamol-aminotransferase product to predict hepatotoxicity in modified-release paracetamol overdose. EAPCCT Conference, Madrid, May.

- MacLeod D, Wong A, Greene SL. Inaccuracy of ECG conduction intervals and rhythm as reported to a Poisons Information Centre (PIC) after deliberate self poisoning. EAPCCT Conference, Madrid, May.
- Arbabian H, Graudins A. Paralytic ileus and anticholinergic toxicity after ingestion of incorrectly prepared lupin seeds. EAPCCT Conference, Madrid, May.
- Wong A. GETUP Updates. The Global Educational Toxicology ToolKIT (GETKIT): A one day course on poisoning management for developing countries. APAMT Conference, Singapore, November.
- Greene SL. Recognition and management of over the counter medicine abuse. APAMT Conference, Singapore, November.

Conference and Meeting Attendances

The following conferences and meetings were attended during 2016:

- As part of the Global Educational Toxicology Uniting Project (GETUP), VPIC/AHCTS staff participated in monthly videoconferencing with the PICs in Fiji, California and South Africa.
- VPIC and AHCTS staff attended and presented at the half-day Toxicology Forum held at the Austin Hospital in April.
- VPIC and AHCTS staff attended and presented at the two national PIC/Toxicology Clinical Meetings (TAPNA), held in May (Brisbane) and November (Sydney).
- In May, AHCTS staff attended and presented at the EAPCCT Conference in Madrid.
- In June, Jeff Robinson and Shaun Greene participated in the Poisons Information and Toxicology Network Australia (PITNA) Working Party teleconference.
- In October, AHCTS staff attended and presented at the ACEM Victorian Faculty Annual Scientific Meeting held in Torquay.
- In November, AHCTS staff attended and presented at the Asia Pacific Association of Medical Toxicology (APAMT) conference held in Singapore.
- In November, Jeff Robinson attended the national PIC/Toxicology Business Meeting held in Sydney.
- In November, Jeff Robinson and Zeff Koutsogiannis attended the national PIC/Toxicology Clinical Meeting held in Sydney.

Other Activities

The following additional activities were undertaken during 2016:

- VPIC/AHCTS educational activities continued to be held every Wednesday, eg teaching sessions, ward round, case discussions including morbidity and mortality review, Toxicology Journal Club.
- Review of VPIC/AHCTS clinical guidelines, policies, procedures, protocols and position statements was ongoing. Abridged versions of clinical guidelines were placed on the Austin Health intranet (Hub) and full versions in the ToxLibrary.
- The process of culling hard-copy references and uploading them into the ToxLibrary was ongoing.
- Ongoing update of the VPIC Policy and Procedure Manual and the VPIC Training Manual.
- During 2016, Jeff Robinson continued as Chairman of the Victorian DHHS Reference and Evaluation Group for the Clinicians' Health Channel.
- During 2016, Jeff Robinson continued his membership of the Health Direct Australia Poisons Information Centre Service Improvement and Development Committee (SIDC).

- Shaun Greene, Jeff Robinson and Anselm Wong continued their membership of the Royal Children's Hospital Toxicology Committee, to assist in the review of the RCH toxicology clinical practice guidelines.
- During 2016, two undergraduate medical students from the University of Melbourne commenced their research projects at VPIC/AHCTS. Their topics were: Use of capnography in management of drug overdoses; Quetiapine poisoning.
- In January, Jeff Robinson reviewed the 'Fungi Poisoning' monograph produced by the Better Health Channel, Victorian DHHS.
- In January and July, Jeff Robinson worked with the Austin Health Clinical Costing Unit to determine the average cost of a call to VPIC.
- In February, Jeff Robinson updated the information sheets for members of the public that are available on the VPIC website www.austin.org.au/poisons
- In February, Jeff Robinson was interviewed by a journalist from The Heidelberg Leader newspaper for an article about summertime envenomations, first aid for bites/stings etc.
- In February, Jeff Robinson was interviewed on community radio 3WBC (Box Hill) about the VPIC service.
- In February, Jeff Robinson attended the Better Health Channel forum 'Harnessing Digital Technology To Change Health Behaviours'.
- In March, Jeff Robinson reviewed the Victorian DHHS information sheet for health professionals 'Blue-green Algae in Victorian Waterways'.
- In April, Jeff Robinson was interviewed by a journalist from The Port Phillip Leader newspaper for an article about synthetic cannabinoids.
- In May, Jeff Robinson provided 2015 VPIC call data to Alanna Ngo, NSWPIC, for inclusion in a national PIC snapshot paper.
- In June, Jeff Robinson reviewed the 'Chemicals in the Home' monograph produced by the Better Health Channel, Victorian DHHS.
- In June, the Austin Health/VPIC/Royal Botanic Gardens Melbourne mushroom identification service agreement was renewed.
- In July, VPIC bites and stings call data (2008 to 2013) was provided to VIFM Honours student Li Yan Di for her research project 'Deaths in Australia from Venomous and Poisonous Animals'.
- In July, Jeff Robinson provided information to Diabetes Australia, Arthritis Australia, Alzheimer's Australia, Parkinson's Australia and Epilepsy Australia about ways to prevent medication misadventure, and what to do if a mistake is made. Each organization was asked to publish the information on their websites and in their state and national magazines, newsletters etc.
- In August, Jeff Robinson joined the TAPNA 2017 Conference Planning Group. The 2017 TAPNA Conference will be held in Melbourne in April 2017.
- In August, Jeff Robinson updated the 'Bites and Stings in Victoria' information on the VPIC website www.austin.org.au/poisons and the VPIC flowchart 'Management of Acute Ingestion of an Anticoagulant Rodenticide'.
- In August, Jeff Robinson set up a VPIC Facebook page www.facebook.com/vpic.131126/
- In August, Shaun Greene was interviewed by a journalist from The Herald Sun newspaper for an article about prescription medicine abuse and deaths due to overdose.
- In September, VPIC's voice-recording software and host server were upgraded.
- In September and October, Jeff Robinson provided VPIC resourcing, activity and financial data to the Intergovernmental Working Group. The Group has been formed by representatives from each state health department to develop a predictable, fair, transparent and sustainable pricing model for the Australian PIC service.

- In October, clinical management guidelines for common poisonings were uploaded to the Austin Toxicology Service website www.austin.org.au/page/508
- In October, Jeff Robinson was interviewed on community radio 3RRR about the VPIC service.
- In October, Christine McKenzie and Janet Browning undertook the annual review of the Victorian Therapeutic Advisory Group's Register of Emergency and Life Savings Drugs. This included refinement of the list of infrequently-used, non-time-critical antidotes to be kept at the Austin Hospital.
- In November, Jeff Robinson drafted national PIC guidelines for tick removal and a position statement 'Off-gassing risk to first responders and health professionals attending patients who have ingested a poison'. The Off-gassing risk position statement was finalised in late November.
- In November, Jeff Robinson and Shaun Greene joined the DHHS Emergency Care Clinical Network Expert Panel to review the Victorian Snake Bite Management Guidelines.
- In November, Jeff Robinson was interviewed by a journalist from The Herald Sun newspaper for an article about the risks to children who ingest water beads.
- In December, Jeff Robinson and Shaun Greene contributed to the development of a national PIC/toxicology poisoning morbidity and mortality process.
- In December, Dawson MacLeod presented a Podcast 'Drug-induced QT Prolongation' for the Society of Hospital Pharmacists of Australia (SHPA).
- VPIC operations were shown to many visitors, including Austin Hospital pharmacy interns, pharmacists from Singapore and the Netherlands, staff from other Australian PICs and overseas medical students.

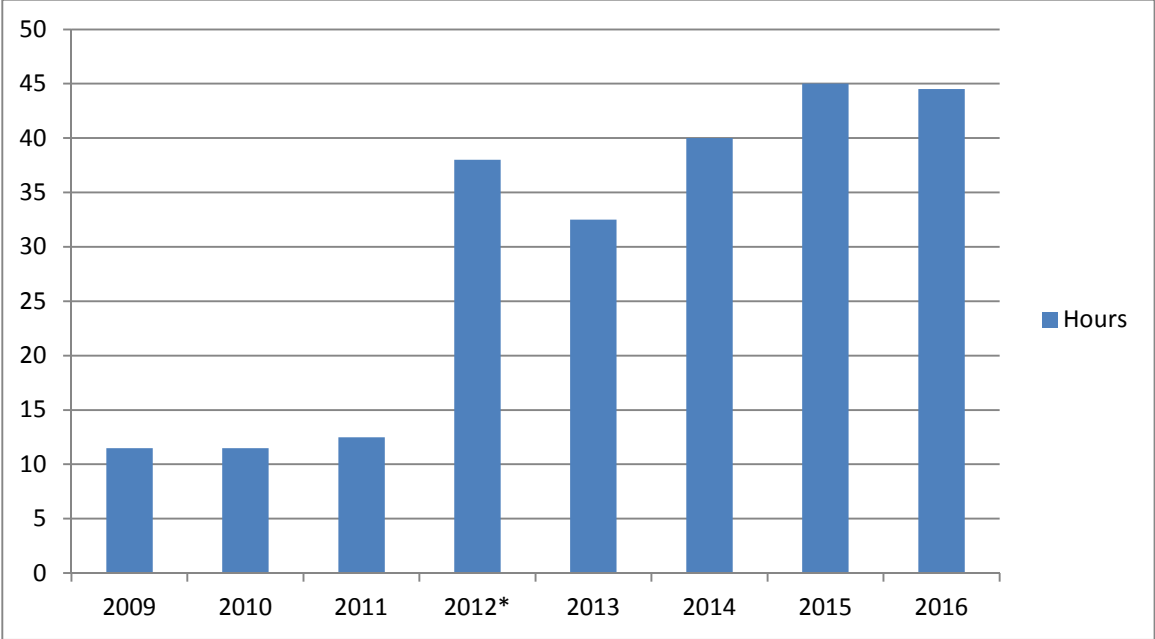
Key Performance Indicators

Outreach education hours

A total of 44.5 outreach education hours were delivered during 2016, see Figure 1 below. This was a slight decrease compared to 2015. Highlights included:

- Half-day Toxicology Forum held at the Austin Hospital in April.
- Presentation 'Prescribing long-acting opioids' at the Australasian Chapter of Addiction Medicine (Victorian Division) conference.
- Meetings with the staff at VIFM in April and December to discuss toxicology cases.
- Presentations at the national PIC/Toxicology Clinical Meeting (TAPNA), held in Brisbane in May.
- Several toxicology skills training sessions delivered to FACEM trainees at the ACEM College.
- Presentation 'Early intervention in toxin-induced shock' as part of a Critical Care Course at Bendigo in June.
- Presentations to ED registrars and FACEM Trainees at the Austin Hospital.
- Presentations to undergraduate medical and pharmacy students, trainee paramedics, emergency nurse practitioners and rural general practitioners.

Figure 1: Outreach education hours

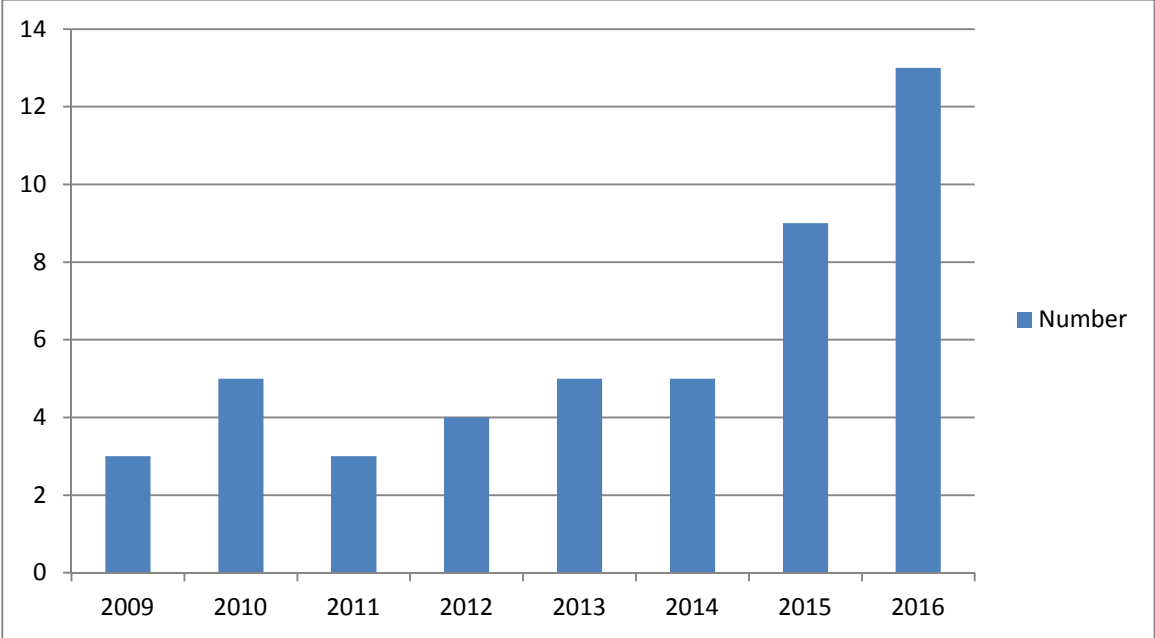


* From 2012, ongoing additional Victorian DHHS funding to support Outreach Education has seen a significant increase over previous years.

Number of papers published

A total of 13 papers were published during 2016, see Figure 2 below. This was a significant increase over recent years.

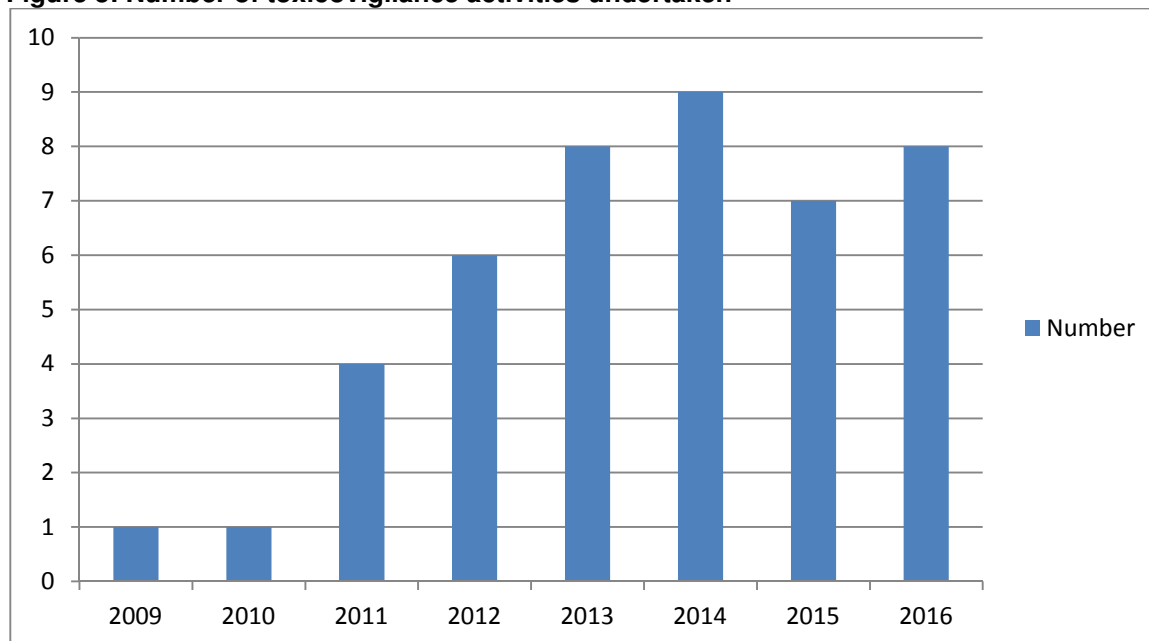
Figure 2: Number of papers published



Number of toxicovigilance activities undertaken

A total of 8 toxicovigilance activities were undertaken during 2016, see Figure 3 below. This was a slight increase compared to 2015.

Figure 3: Number of toxicovigilance activities undertaken

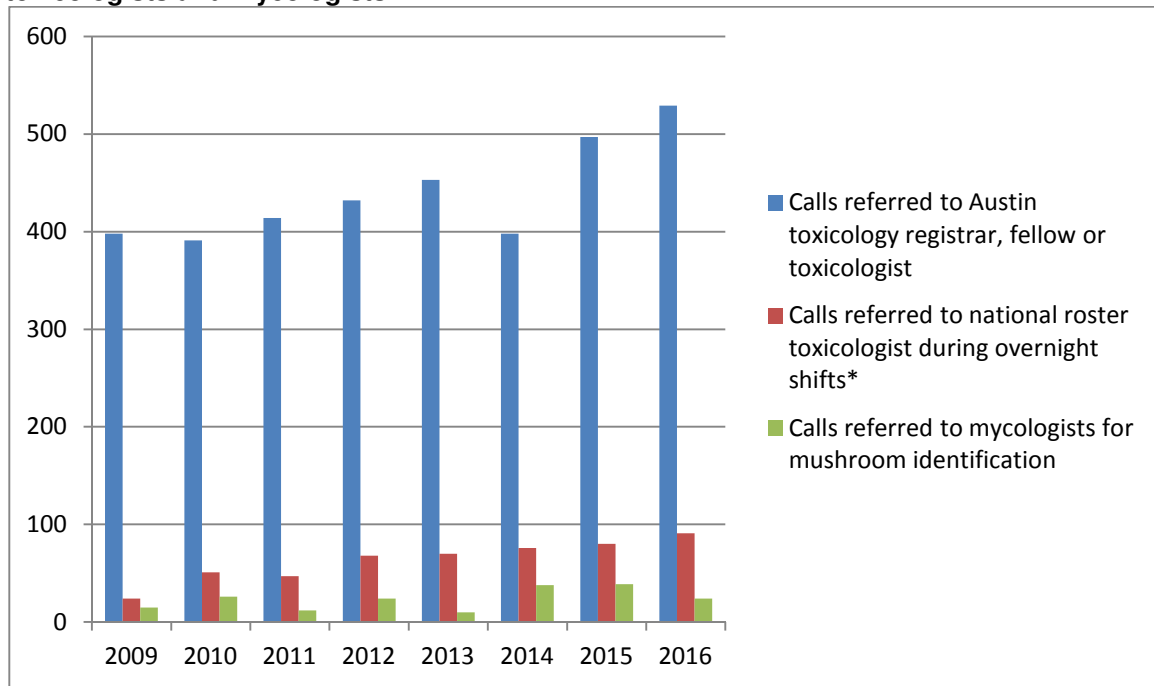


Calls referred to the Austin toxicology registrar, fellow, toxicologists, national roster toxicologists and mycologists

VPIC staff follow escalation protocols to refer complicated and/or severe poisoning cases to the toxicology registrar, fellow or on-call toxicologist for management advice. On-call staff must be readily contactable and must respond promptly, within 10 to 15 minutes, to the health professional who contacted VPIC. When working an overnight shift, such calls are referred to the national roster clinical toxicologist. During normal operating hours in 2016, 529 calls were referred to the Austin Hospital toxicology registrar, fellow or on-call toxicologist (1.4% of the 37,477 total calls answered during normal operating hours). In the 79 overnight shifts worked by VPIC during 2016, 91 calls were referred to the national roster clinical toxicologist (2.6% of the 3,442 overnight shift calls). See Figure 4.

VPIC and the senior mycologists at the Royal Botanic Gardens, Melbourne, have an ongoing service agreement whereby calls to VPIC that involve ingestion of a potentially toxic mushroom are referred to the on-call mycologist for identification of the mushroom/s involved (24 such cases in 2016, a decrease compared to 2015). Mushroom identification may involve emailing photos or couriering specimens to the mycologists.

Figure 4. Calls referred to Austin toxicology registrar, fellow, toxicologists, national roster toxicologists and mycologists

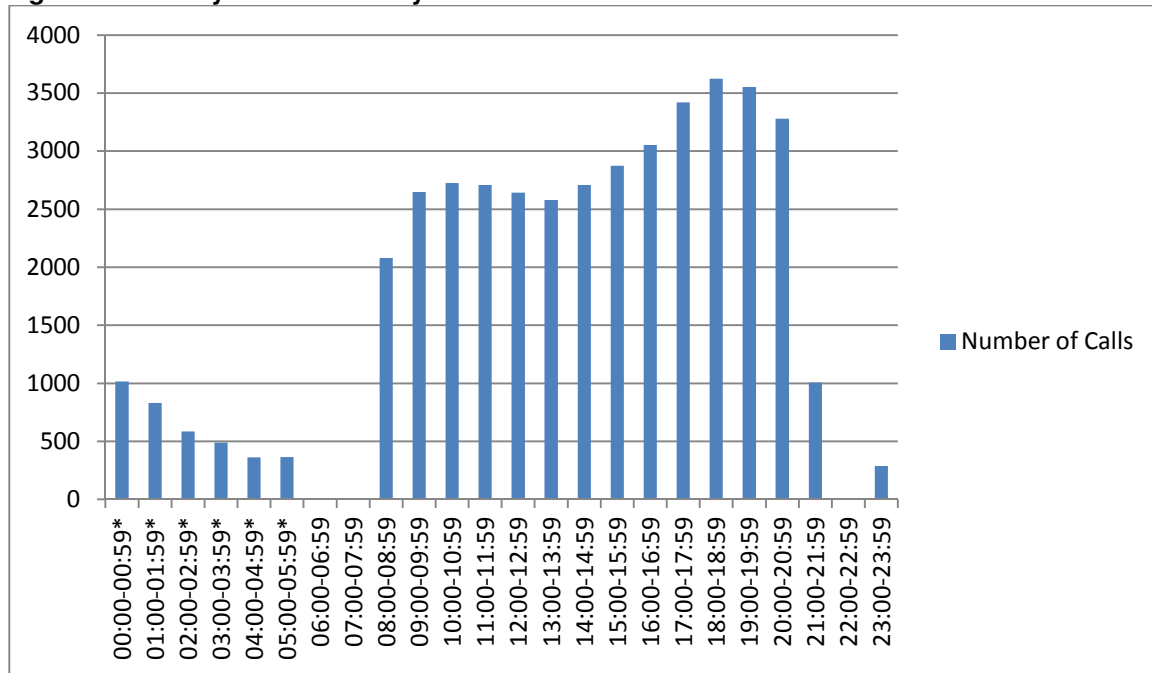


* VPIC worked 25 overnight shifts in 2009. This increased to 52 shifts in 2010, 54 shifts in 2011, 56 shifts in 2012, 66 shifts in 2013, 67 shifts in 2014, 70 shifts in 2015 and 79 shifts in 2016.

Calls by hour of the day

As in previous years, most calls were received between 1600 and 2100 hours, with the period between 1800 and 2000 hours being the busiest, see Figure 5 below.

Figure 5. Calls by hour of the day

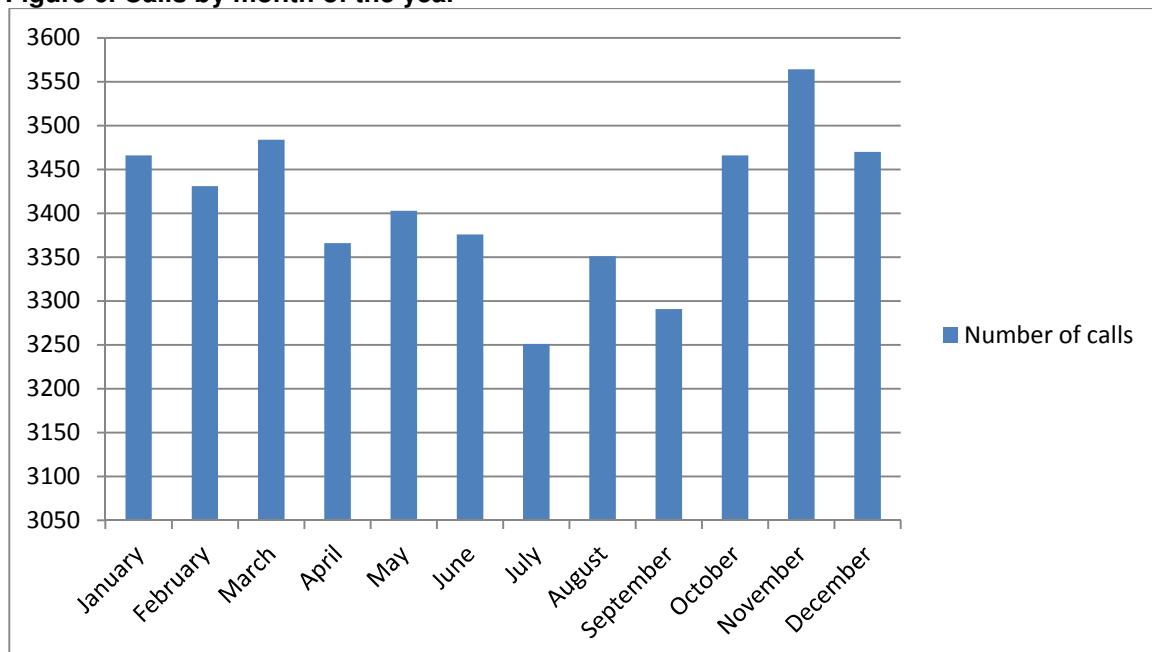


* As VPIC works just seven national overnight shifts per month, the overnight call numbers (12 midnight to 0600 hours) are much lower than daytime numbers.

Calls by month of the year

VPIC call numbers always taper off over the winter months, see Figure 6 below. This is most likely due to more limited outdoor activity during these months. Calls numbers relating to outdoor activities, eg bites, stings and envenomations, increase during the warmer months.

Figure 6. Calls by month of the year



Members of the public client satisfaction survey

During May, 100 members of the public who called VPIC were surveyed to identify:

- Attributes of the VPIC service that they were pleased with
- Attributes of the service that could be improved
- How callers knew about or found the VPIC telephone number.

Participants were asked to rate aspects of the service they received, using the following scale:

Very poor, bad – score 1

Could have been better – score 2

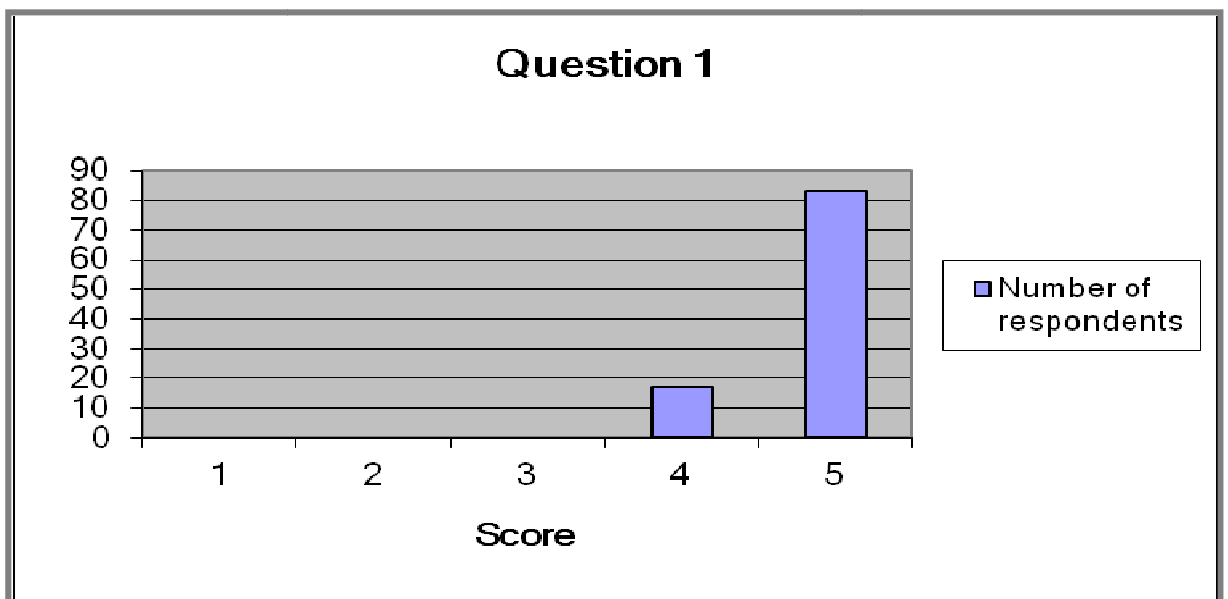
OK, good, satisfactory – score 3

Very good – score 4

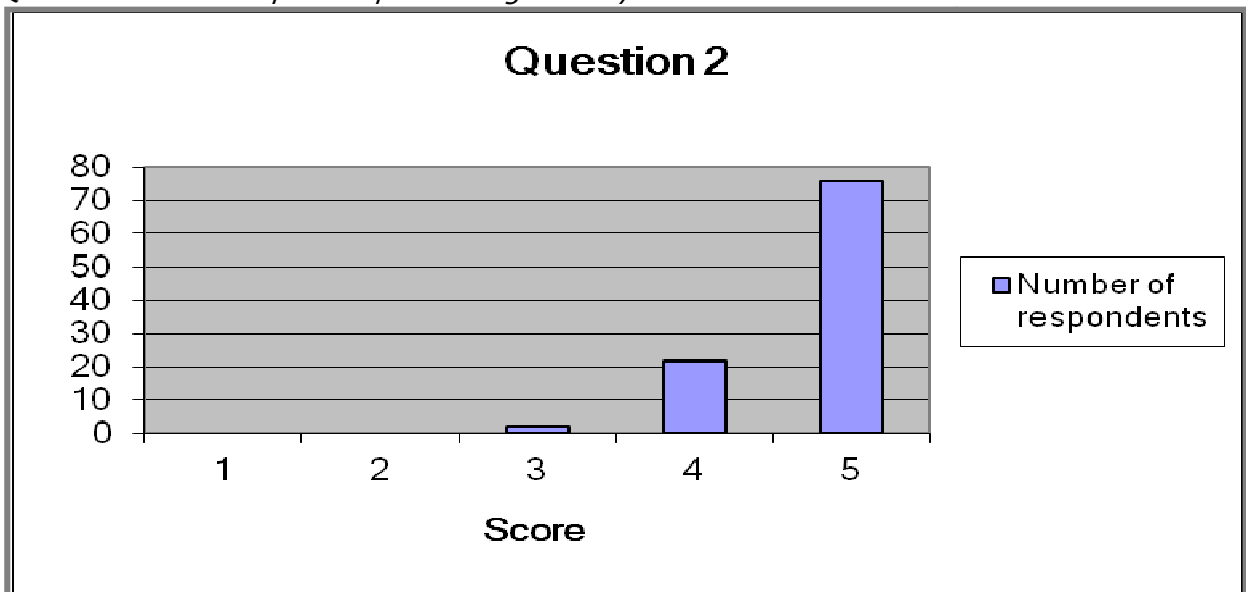
Excellent, outstanding, could not have been better – score 5.

Results were:

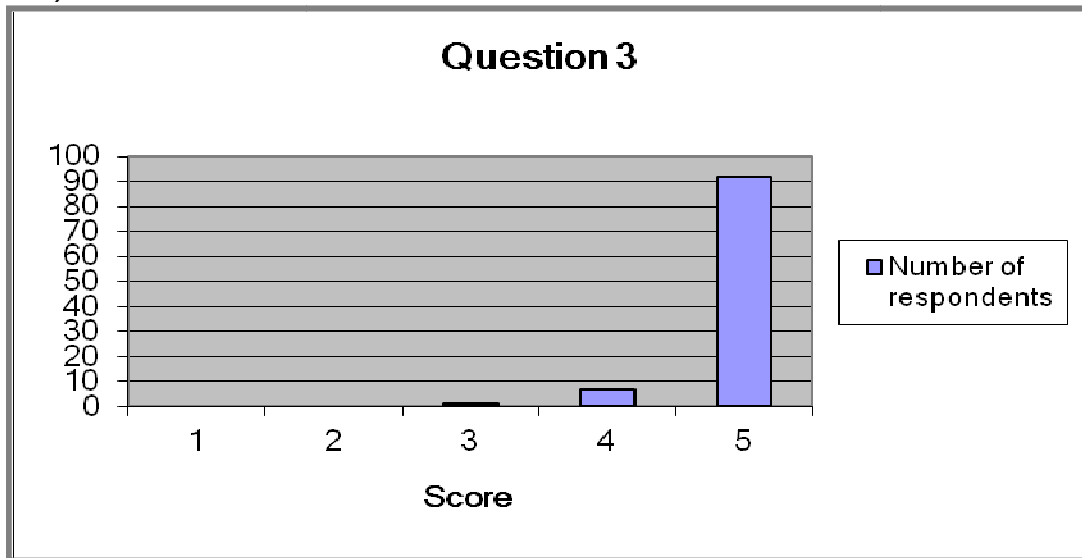
Question 1: Was the advice you received clear and easy-to-understand?



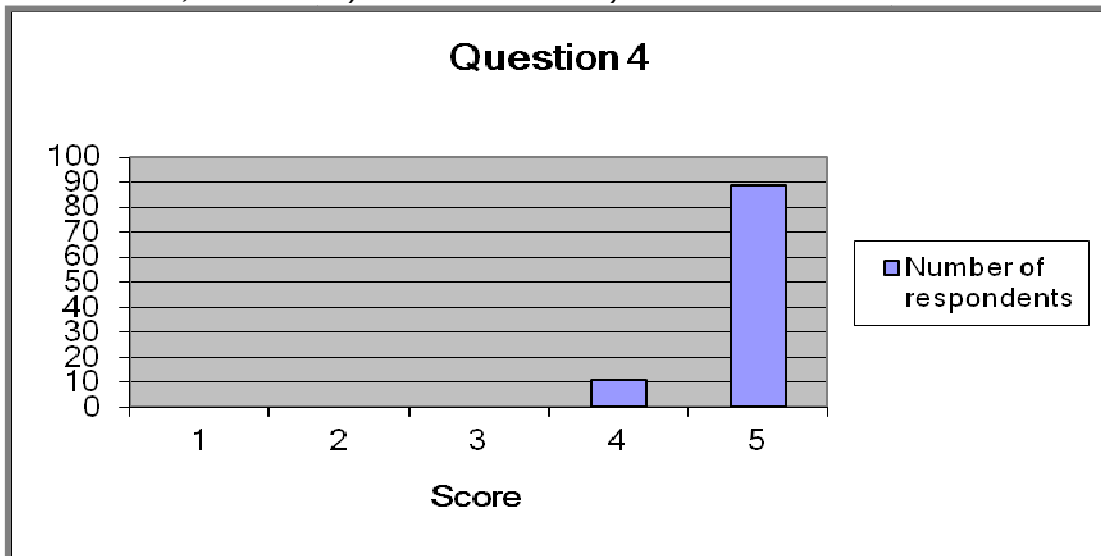
Question 2: Was adequate explanation given to you of the reasons for the advice?



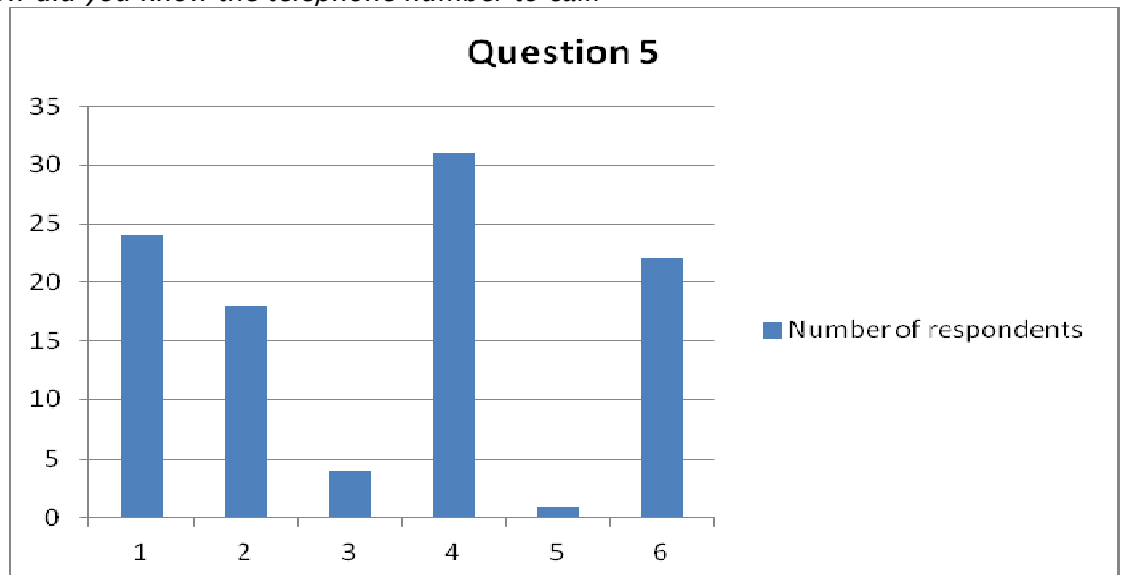
Question 3: How would you rate the courtesy and professional attitude of the person who answered your call?



Question 4: Overall, how would you rate the service you received?



Question 5: How did you know the telephone number to call?



How did you know the telephone number to call?	Number of respondents
1. I already had or knew the number	24
2. The number was on the container	18
3. The number was on the insert inside the box of tablets	4
4. I looked it up on the internet	31
5. I looked it up in the phone book	1
6. Other – please specify (see table below)	22
Total	100

The table below gives the breakdown of the 22 respondents who answered option 6 – Other.

Source of the PIC number – other	Number of respondents
PIC number from fridge magnet	11
Transferred from Nurse–On–Call	7
Transferred from the Maternal and Child Health line	2
Given the PIC number after calling GP surgery	2
Total	22

Question 6: Do you have any comments about the service, suggestions for improvement etc?

Comment/suggestion	Number
Nil	22
Positive comments about the service in general, eg great service, wonderful, fabulous, excellent, superb, cannot fault the service, very happy, answered straight away	75
Positive comments about the staff, eg polite, reassuring, calmed me down, helpful, thorough, lovely lady, non-judgemental	20
Had to wait before being answered	6*
Had called VPIC before	4

* 3 of these also commented favourably about the service, indicating that the wait was not a big issue for them.

Discussion and conclusion

The overwhelmingly high rating scores for Questions 1 to 3 were very pleasing. These high ratings for important aspects of the VPIC service were confirmed in Question 4, where all participants gave the service an overall rating of 4 or above., ie ‘very good, excellent, outstanding, could not have been better’. Another welcome finding was that no participants expressed problems with finding the VPIC telephone number. Nine participants had been transferred to VPIC from Nurse–On–Call or the Maternal and Child Health lines, and 2 had called VPIC on the advice of their GP surgery.

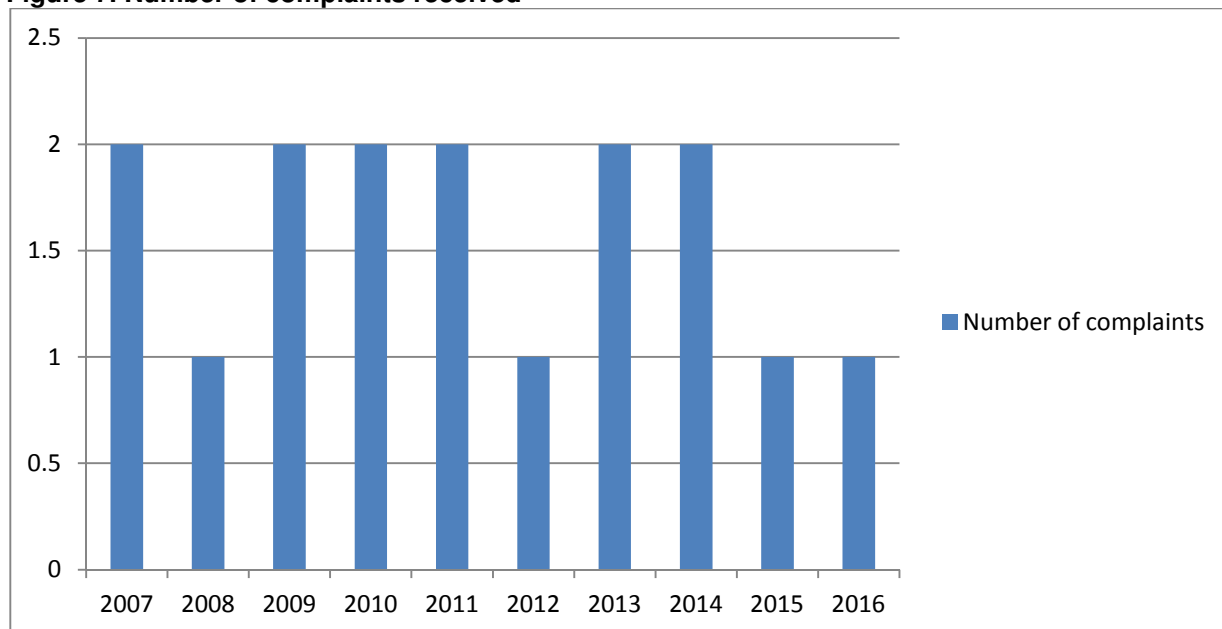
Of the 6 participants who commented about having to wait to be answered, 3 said that the wait was not a big issue for them. With current staffing levels, it is inevitable that some callers will be placed in the waiting queue, particularly during peak call periods. VPIC staff are well aware of this issue. They answer calls as quickly as possible, without compromising the standard of advice given. The survey showed that one of VPIC’s core business groups, ie members of the public calling about a human poisoning exposure, are satisfied with the service and rate it very

highly. Having to wait to be answered seems to be the one aspect of the service that a small number of callers would like improved.

Complaints received

Just one complaint about the VPIC service was received during 2016. It was handled according to the VPIC complaints investigation procedure.

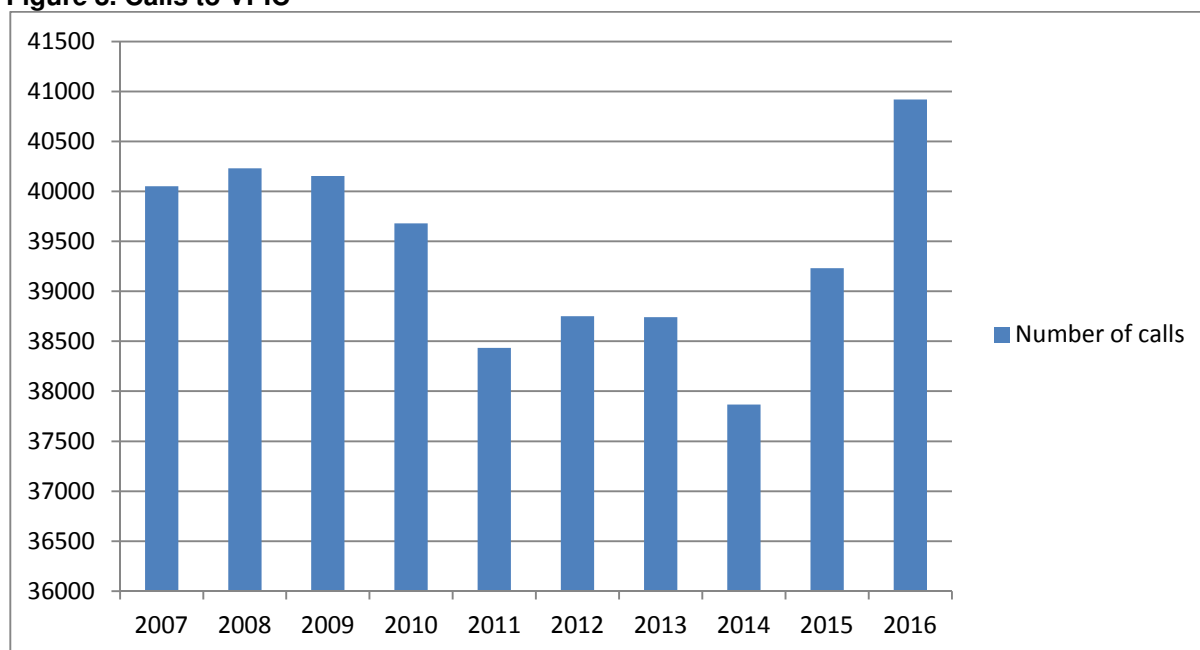
Figure 7. Number of complaints received



Calls to VPIC

VPIC received a total of 40,919 calls in 2016, an average of 112 calls per day. This was slightly above 2015 (39,230 calls, average 107 calls per day) and 2014 (37,866 calls, average 104 calls per day) and 2013 (38,740 calls, average 106 calls per day). The 2016 total includes 3,442 calls answered by VPIC during 79 overnight shifts (New South Wales 1,097, Victoria 841, Western Australia 479, Queensland 660, South Australia 236, Tasmania 40, Australian Capital Territory 65, Northern Territory 24). Ninety one of these overnight calls were referred to the national roster toxicologist.

Figure 8. Calls to VPIC



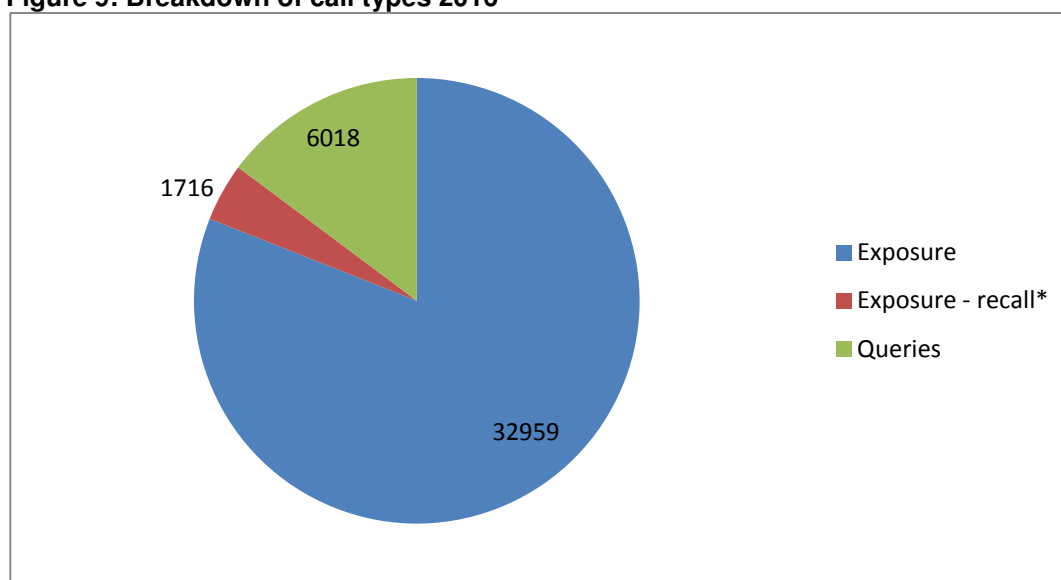
Call types (Figure 9)

Most calls involved an exposure. Approximately one-in-seven calls were queries.

Call type	Number of calls	%
Exposure to a poison	32,959	81
Exposure to a poison – recall*	1,716	4
Queries	6,018	15
Queries – recall*	193	<1
Hoax	33	<1
Total	40,919	100

* A recall is a second or subsequent call about a particular exposure or query.

Figure 9: Breakdown of call types 2016



* A recall is a second or subsequent call about a particular exposure or query.

Query types

The types of queries received are shown below.

Query type	Number of calls including recalls	%
Drug information: adverse drug reaction	256	4
Drug information: pregnancy	239	4
Drug information: breastfeeding	230	4
Drug information: missed dose	816	13
Drug information: dosage	440	7
Drug information: interactions	529	9
Drug information: refusing dose	18	<1
Drug information: other	860	14
Medical	239	4
Request for pamphlets, stickers, fridge magnets etc	77	1
PIC phone number check	115	2
Manufacturer	414	7

Request for Material Safety Data Sheet (MSDS)	81	1
Wrong number	584	9
National Poisons Register (NPR) referral	21	<1
Complaint or compliment	6	<1
Product recall or safety alert	15	<1
Poisons information: other	943	15
Other queries	328	5
Total	6,211	100

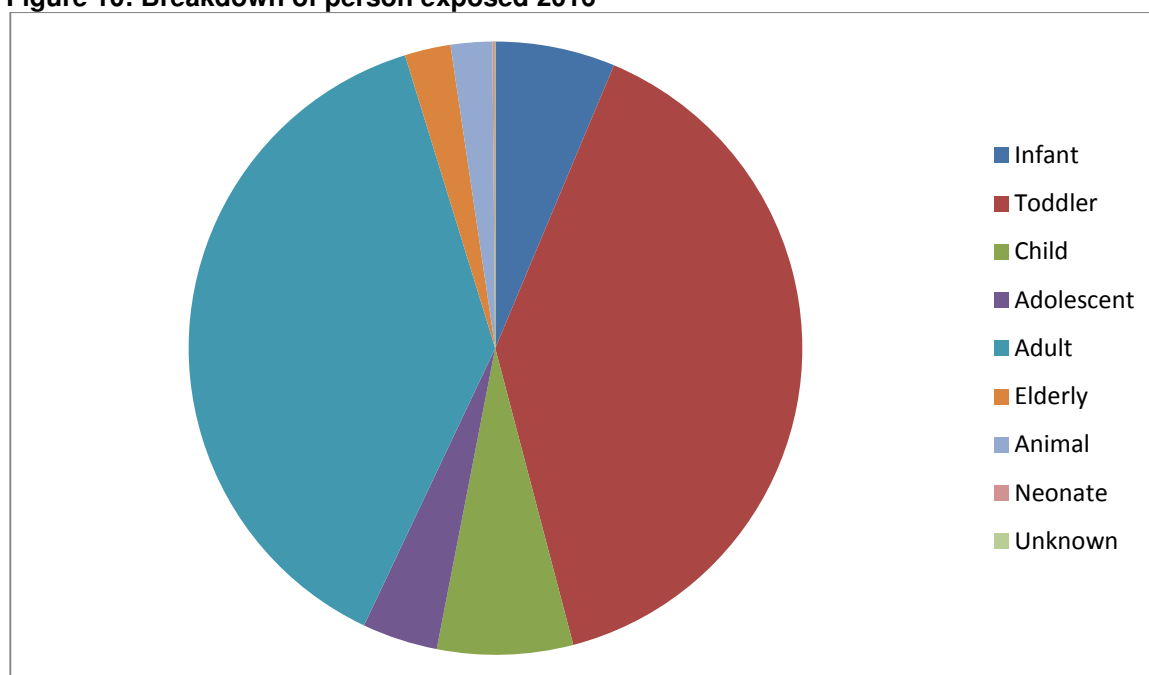
Person exposed (Figure 10)

The majority of calls about exposure to a poison involved toddlers.

Person exposed	Number of calls including recalls	%
Neonate (0 to 4 weeks)	52	<1
Infant (4 weeks to 1 year)	2,190	6
Toddler (1 to 4 years)	13,731	40
Child (5 to 14 years)	2,478	7
Adolescent (15 to 19 years)	1,381	4
Adult (20 to 74 years)	13,243	38
Elderly (>75 years)	841	2
Unknown	2	<1
Animal*	757	2
Total	34,675	100

* Callers phoning about an exposure involving an animal were referred to their vet

Figure 10: Breakdown of person exposed 2016



Person-calling (animal exposures excluded)

The majority of calls about exposure to a poison were received from parents.

Person-calling	Number of calls including recalls	%
Family member: parent	14,758	44
Family member: spouse or partner	873	3
Family member: grandparent	480	1
Family member: other	1,263	4
Self	7,066	21
Doctor	4,467	13
Nurse	1,408	4
Carer	1,480	4
Friend	610	2
Ambulance: officer	458	1
Ambulance: communications or despatch	365	1
Pharmacist	195	<1
Counsellor, eg Lifeline, Suicide Help Line etc	153	<1
Teacher or educational worker	156	<1
Police	16	<1
Veterinary personnel	69	<1
Other health professional, eg dentist, psychologist, social worker, optometrist	55	<1
Medical receptionist	18	<1
Other, eg fire brigade, media, prison officer etc	28	<1
Total	33,918	100

Types of exposure (animal exposures excluded)

The majority of calls about exposure to a poison involved unintentional accidental exposures.

Types of exposure	Number of calls including recalls	%
Unintentional accidental	21,143	62
Unintentional therapeutic error	6,152	18
Unintentional workplace	853	3
Unintentional food poisoning	66	<1
Unintentional environmental	7	<1
Unintentional other	26	<1
Adverse reaction	221	<1
Intentional deliberate self poisoning	4,303	13
Intentional misuse	470	1
Intentional recreational abuse	326	1

Intentional other	304	1
Other	47	<1
Total	33,918	100

Routes of exposure (animal exposures excluded)

The majority of calls about exposure to a poison involved ingestion.

Route of exposure	Number of calls including recalls	%
Ingestion	33,250	81
Ocular	2,098	5
Inhalation	1,869	5
Dermal	1,696	4
Bite/sting	907	2
Injection	449	1
Buccal/sublingual/oral mucosal	727	2
Nasal	105	<1
Aural	32	<1
Vaginal	18	<1
Rectal	24	<1
Other/unknown	28	<1
Total	*41,203	100

* The number of routes of exposures is greater than the person exposed, person calling and types of exposure numbers because a call sometimes has more than one exposure route, eg household items sprayed into the mouth, face and eyes.

Location of exposure (animal exposures excluded)

Over 90% of exposures occurred at home.

Location of exposure	Number of calls including recalls	%
Home and surroundings	30,542	91
Nursing home/aged care facility	171	<1
CRU/group home/supported accommodation	1,255	4
Child care centre	110	<1
Workplace: office	47	<1
Workplace: factory	58	<1
Workplace: farm/agricultural	186	1
Workplace: retail outlet	38	<1
Workplace: hospitality	64	<1
Workplace: garage/workshop	42	<1
Workplace: laboratory	32	<1
Workplace: minesite	5	<1
Workplace: other	341	1
Education facility	326	1
Entertainment venue	59	<1
Open space, eg park, beach	286	1
Medical facility: hospital	156	<1

Medical facility: non-hospital	55	<1
Prison, detention facility	50	<1
Restaurant/food service	15	<1
Other/unknown	80	<1
Total	33,918	100

Patient disposition – neonates (0 to 4 weeks)

The majority of neonates exposed to a poison required no referral.

Patient disposition	Number of calls including recalls	%
No referral required	44	84
Hospital refer	1	2
In hospital	5	10
GP refer	2	4
At GP surgery	0	0
Call ambulance	0	0
Other	0	0
Total	52	100

Patient disposition – infants (4 weeks to 1 year)

The majority of infants exposed to a poison required no referral.

Patient disposition	Number of calls including recalls	%
No referral required	2,011	92
Hospital refer	29	1
In hospital	70	3
GP refer	23	1
At GP surgery	33	2
Call ambulance	22	1
Other	2	<1
Total	2,190	100

Patient disposition – toddlers (1 to 4 years)

The majority of infants exposed to a poison required no referral.

Patient disposition	Number of calls including recalls	%
No referral required	12,157	88
Hospital refer	381	3
In hospital	771	6
GP refer	61	<1
At GP surgery	180	1
Call ambulance	3	<1
Other	178	1
Total	13,731	100

Patient disposition – children (5 to 14 years)

The majority of children exposed to a poison required no referral.

Patient disposition	Number of calls including recalls	%
No referral required	1,860	75
Hospital refer	141	6
In hospital	302	12
GP refer	48	2
At GP surgery	66	3
Call ambulance	2	<1
Other	59	2
Total	2,478	100

Patient disposition – adolescents (15 to 19 years)

The majority of adolescents exposed to a poison were already in hospital.

Patient disposition	Number of calls including recalls	%
No referral required	339	25
Hospital refer	235	17
In hospital	688	50
GP refer	50	4
At GP surgery	16	1
Call ambulance	8	<1
Other	45	3
Total	1,381	100

Patient disposition – adults (20 to 74 years)

The majority of adults exposed to a poison required no referral.

Patient disposition	Number of calls including recalls	%
No referral required	6,703	51
Hospital refer	1,466	11
In hospital	3,422	26
GP refer	604	5
At GP surgery	394	3
Call ambulance	89	<1
Other	565	4
Total	13,243	100

Patient disposition – elderly (>75 years)

The majority of elderly people exposed to a poison required no referral.

Patient disposition	Number of calls including recalls	%
No referral required	545	65
Hospital refer	58	7

In hospital	147	17
GP refer	36	4
At GP surgery	13	1
Call ambulance	5	<1
Other	37	4
Total	841	100

Symptom severity at the time of the call (animal exposures excluded)

The majority of human exposures were asymptomatic at the time of the call to VPIC.

Poisoning severity score*	Number of calls including recalls	%
None	25,367	75
Minor	7,960	24
Moderate	449	1
Severe	140	<1
Fatal	2	<1
Total	33,918	100

* Symptom severity scoring is based on the Poisoning Severity Score. Persson HE, Sjoberg GK, Haines JA, Pronczuk de Garbino J. Poisoning severity score. Clin Tox 1998; 36(3): 205-13.

Top ten exposure substances

VPIC's top ten exposure substances during 2016 are shown below.*

Substance	Number of calls
Paracetamol	2443
Benzodiazepines	1324
Ibuprofen	1242
Selective serotonin re-uptake inhibitor antidepressants	1044
Quetiapine	752
Topical antiseptics, handsanitiser	716
Bleach (hypochlorite based)	654
Paracetamol/narcotic combination analgesic	611
Detergent: hand dish	461
Toilet bowl cleaner/deodoriser: cage/disc type	445

*These are not necessarily the most toxic, but rather may be the most accessible.

Exposures to non-medicine, non-drug products

Substance/product	Number of calls (all routes of exposure)
HOME PRODUCTS	
Adhesives, glues, cements, pastes	
Cyanoacrylates	140
Epoxy resins	17
Model glues, cements	8
Non-toxic glues, pastes	49
Adhesive, glue, cement, paste: other/unknown	57
Art, craft, hobby, writing products	
Chalk	36
Correction fluid	9
Crayon	21
Paint: artists' paints, non-water colour	5
Paints: artists' paints, water colours	26
Paper/cardboard	26
Pencil	22
Pens/ink (including stamp pad ink, textas)	200
Printer ink/cartridge	9
Art, craft, writing products: other/unknown	42
Batteries	
Automotive/aircraft/marine	7
Disc/button	107
Mobile phone	1
Penlight/flashlight/dry cell (AA, AAA etc)	59
Battery: other/unknown	6
Cleaners, bleaches, detergents etc	
Bleach (hypochlorite based)	654
Bleach: other/unknown	11
CD/DVD cleaner	3
Cleaner: all purpose/hard surface	393
Cleaner: ammonia based	10
Cleaner: baby bottle	8
Cleaner: bathroom/shower/tile	137
Cleaner: carpet	68
Cleaner: drain	96
Cleaner: floor	90
Cleaner: glass/window	134
Cleaner: industrial	123
Cleaner: leather/vinyl/upholstery	9
Cleaner: nappy	9
Cleaner: oven	176
Cleaner: other/unknown	183

Detergent: anionic/non-ionic (not hand dish type)	19
Detergent: automatic dishwasher liquids	26
Detergent: automatic dishwasher powders/tablets	294
Detergent: automatic dishwasher rinse agents	85
Detergent: cationic (not disinfectants)	5
Detergent: hand dish	461
Detergent: laundry	362
Disinfectant	316
Fabric softener	28
Ironing aid/starch	16
Laundry additive	56
Pre-wash stain remover	123
Rust remover: other/unknown	10
Sugar soap (sodium carbonate)	23
Toilet bowl cleaner/deodoriser: cage/disc type	445
Toilet bowl cleaner: powder/liquid	59
Vaporiser cleaning tablet	13
Fire extinguishers	
BCF/Halon	1
Dry powder	36
Foam	4
Food products, food poisoning	
Artificial sweeteners	2
Dietary/nutritional/energy/workout supplements	121
Food additives	155
Food allergy	12
Food poisoning	52
Food recall/scare	2
Food spoilage	238
MSG (Chinese Restaurant Syndrome)	1
Garden products	
Fertiliser: household plant food	33
Fertiliser: outdoor	55
Soil/potting mix	45
Miscellaneous home products	
Air fresheners	208
Blu-tac	14
Bubble blowing solution	136
Charcoal	14
Christmas decorations	7

Cigarettes and tobacco products	125
Coins	28
Cyalume light sticks/glow necklaces	225
Desiccants: other/unknown (not silica gel)	74
Dyes: fabric	9
Dyes: food	10
Dyes: other/unknown	19
Fire starters	68
Foreign body	160
Fragrant oil/pot pourri oil	95
Freezer/cold packs	122
Glass	9
Incense	8
Massage oil	21
Matches	12
Pet food	30
Plastic/polystyrene	103
Pot pourri	3
Room deodoriser	90
Silica gel	407
Thermometer: mercury	54
Thermometer: non-mercury	12
Toys	183
Water crystals/gel beads/hydrogels	57
Household products: other/unknown	674
Photographic products	
Photographic chemicals	7
Polishes and waxes	
Polish/wax: furniture	25
Polish/wax: metal	13
Polish/wax: shoe/boot	8
Polish/wax: other/unknown	1
Swimming pool and aquarium products	
Aquarium products	21
Pool chlorine	88
Pool test kits/solutions	4
Pool products: other/unknown	9
BUILDING/HANDYMAN PRODUCTS	
Building products	
Asbestos	15
Asphalt/bitumen	2
Caulking compounds and construction putties	16
Cement/concrete/lime	48
Clay	4

Fibreglass	1
Insulation	7
Methyl ethyl ketone	20
Methyl ethyl ketone peroxide	9
Soldering flux	2
Building/handyman products: other/unknown	51
Paints and paint strippers	
Copper chrome arsenate (wood preservative)	10
Creosote (wood preservative)	6
Paints: oil-based	70
Paints: water-based house type	50
Paint strippers: methylene chloride based	9
Paint strippers: other/unknown	7
Paint thinner	32
Paints: other/unknown	94
Varnishes and lacquers	18
Wood stains	19
CAR/BOAT PRODUCTS	
Car products: antifreeze	31
Car products: brake fluid, transmission fluid etc	14
Car products: other/unknown	62
CHEMICALS	
Alcohols	
Alcohol ethanol (beverage)	315
Alcohol ethanol (non-beverage)	105
Alcohol: higher (butanol, propanol etc)	1
Isopropanol	15
Methanol	6
Essential oils	
Camphor	9
Clove oil	11
Eucalyptus oil	229
Tea tree oil	103
Essential oil: other/unknown	161
Fumes, gases, vapours	
Carbon dioxide	2
Carbon monoxide	69
Chlorine	11
Chlorine/chloramine gas (mixing household cleaning agents)	64
Helium	2
Hydrogen sulphide	7

Lacrimators (Mace spray, tear gas etc)	1
Methane and natural gas	109
Propane and other simple asphyxiants	19
Smoke/toxic products of combustion	78
Fume/gas/vapour: other/unknown	57
General chemicals	
Acetone (not nail polish removers)	16
Acids: other/unknown	43
Alkalis (not cleaners)	35
Ammonia (not cleaners)	17
Borates (not insecticides)	29
Copper sulphate	24
Corrosives: other/unknown	8
Cyanide	1
Ethylene glycol and other glycols	37
Formaldehyde/formalin	24
Hydrochloric acid	53
Hydrofluoric acid	21
Hydrogen peroxide (non-medical)	43
Iodine (non-medical)	6
Isothiazolones (acticide, biocide, kathon, octhiline etc)	2
Methylene chloride (not paint strippers)	
Phenol and other phenolics	3
Phosphorus	1
Polychlorinated/polybrominated biphenyls	1
Potassium permanganate	6
Strychnine	2
Sulphur	1
Toluene diisocyanate	8
Chemicals: other/unknown	183
Heavy metals	
Aluminium	17
Copper	5
Lead	48
Mercury (not thermometers)	27
Metal fume fever	5
Selenium	1
Heavy metals: other/unknown	11
Hydrocarbons	
Hydrocarbons: aliphatic	21
Hydrocarbons: halogenated	26
Hydrocarbons: other/unknown	11
Kerosene	20
Lamp oil	9

Lighter fluid	3
Oils: lubricating/engine/machine	106
Petrol	187
Shellite	2
Toluene/xylene	13
Turpentine, mineral	129
BITES AND STINGS	
Insects	
Ant	20
Bee	37
Caterpillar	3
Centipede/millipede	14
Mosquito	1
Scorpion	25
Tick	19
Wasp/hornet	39
Insect bites: other/unknown	90
Mammals	
Animal bite: dog/cat	3
Animal bite: other/unknown	20
Marine	
Bluebottle	1
Blue-ringed octopus	4
Fish stings: other/unknown	26
Jellyfish and other <i>Coelenterate</i> stings	13
Stingray	4
Marine bites/stings: other/unknown	15
Reptiles and amphibians	
Lizard	3
Snake	174
Spiders	
Redback spider	130
White-tailed spider	75
Spider bite: other/unknown	269
COSMETICS AND PERSONAL CARE PRODUCTS	
Cosmetics	
Antiperspirants	41
Baby oil	53
Baby wipes	11
Bath oil/bubble bath/bath preparations	137
Creams/lotions/make-up	213
Deodorants	94
Depilatories	24
Lipstick/lip balms	27

Perfume/cologne/aftershave	183
Soap	212
Sunscreen/suntan products	101
Talc and other external powders	69
Cosmetics: other/unknown	44
Dental/oral care products	
Denture cleaning agents	40
Mouthwash: ethanol containing	32
Mouthwash: non-ethanol containing	29
Mouthwash: other/unknown	3
Teething gels	80
Toothache drops	10
Toothpaste with fluoride	85
Toothpaste without fluoride	4
Dental care products: other/unknown	6
Hair care products	
Hair colours (not peroxide)	47
Hair colours (peroxide)	47
Hair conditioner	20
Hair gel/mousse	15
Hair spray	20
Shampoo antidandruff: selenium based	9
Shampoo antidandruff: zinc pyrithione	8
Shampoo antidandruff: other	6
Shampoo non-medicated	77
Hair care: other	57
Nail products	
Nail hardener	3
Nail polish	97
Nail polish remover	197
Nail primer	4
Nail products: other/unknown	26
PESTICIDES/HERBICIDES/FUNGICIDES	
Baits	
1080/monofluoroacetate	3
Rodenticides: anticoagulant (warfarin type)	12
Rodenticides: anticoagulant (long-acting)	224
Rodenticides: other/unknown	65
Baits: other/unknown	65
Carbamates	
Carbamates	4
Carbamates in combination with other	2

Chlorinated hydrocarbons	
Chlorinated hydrocarbons (endrin, dieldrin, heptachlor etc)	1
Fumigants	
Bromides	1
Phosphine	8
Fumigants: other	1
Fungicides	
Carbamate type	5
Copper type	5
Phthalimide type (captan, captafol etc)	1
Fungicides: other/unknown (non-medical)	12
Herbicides	
Glyphosate	250
Herbicides: chlorphenoxy type (2, 4 D; MCPA etc.)	50
Herbicides: protox inhibitor type (acifluorfen, oxyfluorfen etc)	10
Herbicides: pyridine type (clopyralid, triclopyr etc.)	30
Herbicides: triazine type (atrazine, simazine etc.)	8
Herbicides: urea type	2
Paraquat/diquat	12
Herbicides: other/unknown	57
Insecticides/pesticides	
Arsenic	1
Borates/boric acid pesticides	73
Insect coils	3
Insect repellants containing DEET	66
Insect repellants not containing DEET	40
Pyrethrins/pyrethroids	438
Rotenone	3
Snail/slug bait: iron edetate	7
Snail/slug bait: metaldehyde	46
Snail/slug bait: methiocarb	6
Pesticides: other/unknown	72
Moth repellents	
Naphthalene moth repellants	36
Organophosphates	
Organophosphates	31
PLANTS AND MUSHROOMS	
Mushrooms	269

Plants: amaryllidaceae	19
Plants: amygdalin/cyanogenic glycosides	49
Plants: anticholinergic	13
Plants: cactus	4
Plants: capsaicin	21
Plants: cardiac glycosides	31
Plants: daphne	3
Plants: dermatitis	23
Plants: dieffenbachia	1
Plants: euphorbiaceae	42
Plants: gastrointestinal irritants	49
Plants: grayanotoxins	2
Plants: hallucinogenic	1
Plants: holly	1
Plants: lantana	2
Plants: non-toxic	57
Plants: oxalate	135
Plants: solanine	68
Plants: toxalbumins	5
Plants: toxicodendrol	2
Plants: other/unknown	182
VETERINARY PRODUCTS	
Veterinary: animal vaccines	54
Veterinary: external medicines	139
Veterinary: flea collars/insecticidal washes	5
Veterinary: heart worm preparations	9
Veterinary: internal medicines	248
MISCELLANEOUS NON-MEDICINE, NON-DRUG EXPOSURES	
Blue-green algae	15
Faeces/urine	81
Radioactive material	1
Snail/slug	21

Exposures to medicines and drugs

Medicine/drug	Number of calls (all routes of exposure)
ANAESTHETICS	
Anaesthetics: inhalation	1
Anaesthetics: topical/local	44
Anaesthetics: other/unknown	1
Nitrous oxide	5
ANALGESICS	
Aspirin/narcotic combination analgesic	3
Aspirin/salicylates	247
Codeine	47
Fentanyl	10
Morphine	15
Oxycodone	426
Paracetamol	2443
Paracetamol/caffeine combination	8
Paracetamol/ibuprofen combination	7
Paracetamol/metoclopramide combination	3
Paracetamol/narcotic combination	611
Tapentadol	28
Tramadol	196
Analgesics: narcotic other/unknown	6
Analgesics: non-narcotic other/unknown	2
ANTICHOLINERGICS	
Atropine	1
Benztropine	30
Orphenadrine	5
Anticholinergic drugs: other/unknown	36
ANTICOAGULANTS and BLOOD PRODUCTS	
Apixaban	34
Dabigatran	13
Heparin	4
Rivaroxaban	48
Warfarin	62
Anticoagulants: other/unknown	4
Blood products: other/unknown	2
ANTIHISTAMINES	
Cetirizine	115
Dexchlorpheniramine	23
Fexofenadine	109
Loratadine	133
Pheniramine	6
Promethazine	160

Antihistamines: other/unknown	31
ANTIMICROBIALS	
Antibiotics	
Aminoglycosides	1
Antibiotic combinations (Augmentin, Bactrim etc.)	52
Cephalosporins	102
Macrolides	66
Penicillins	210
Quinolones	8
Sulphonamides	1
Tetracyclines	51
Antibiotics: other/unknown	39
Antifungals	
Antifungal drugs (ketoconazole, fluconazole etc)	14
Antiparasitics/Anthelmintics	
Anthelmintics	100
Antianaerobes (metronidazole, tinidazole etc)	20
Antimalarials (not quinine, chloroquine)	1
Antitubercular drugs	4
Antivirals	
Antiviral drugs	49
ANTIMIGRAINE DRUGS	
Triptans (naratriptan, sumatriptan etc)	12
Migraine preparations: other/unknown	14
ASTHMA/RESPIRATORY DRUGS	
Anticholinergics (ipratropium, glycopyrronium, tiotropium, acclidinium, umeclidinium etc)	77
Bronchodilators (salbutamol, terbutaline, eformoterol, salmeterol, indacaterol, vilanterol etc)	29
Leukotriene receptor antagonists (montelukast, zafirlukast etc)	38
Preventors	46
Theophylline and other xanthines	5
Asthma drugs: other/unknown	2
CARDIOVASCULAR DRUGS	
ACE inhibitor/diuretic combinations	18
ACE inhibitors	177
Adrenaline	62

Alpha blockers	43
Angina preparations	5
Angiotensin II antagonist/diuretic combinations	77
Angiotensin II antagonists	198
Antiarrhythmic agents	30
Antihypertensives: other (not diuretics)	35
Antiplatelet agents: other (clopidogrel, dipyridamole, ticagrelor etc)	63
Beta blockers	418
Calcium antagonist/ACE inhibitor combinations	27
Calcium antagonist/angiotensin II antagonist combinations	32
Calcium antagonist/angiotensin II antagonist/diuretic combinations	14
Calcium antagonist/statin combinations	14
Calcium antagonists	180
Cardiac glycosides	41
Diuretics: other	126
Diuretics: potassium sparing	31
HMG CoA reductase inhibitors (statins)	220
Lipid lowering agents: fibrates (gemfibrozil, fenofibrate etc)	15
Lipid lowering agents: other	8
Nitrates	33
Vasodilators	20
Vasopressors	1
Cardiovascular drugs: other/unknown	7
CENTRAL NERVOUS SYSTEM DRUGS	
Antidepressants	
Agomelatine	41
Duloxetine	105
Mianserin	4
Mirtazapine	218
Monoamine oxidase inhibitors	14
Selective serotonin reuptake inhibitors (citalopram, escitalopram, fluoxetine etc.)	1044
Tricyclic antidepressants	223
Venlafaxine/desvenlafaxine	326
Antidepressants: other/unknown	10
Antiepileptics	
Carbamazepine	136
Gabapentin	27
Lamotrigine	117
Levetiracetam	64
Phenytoin	35

Pregabalin	216
Topiramate	44
Valproic acid	293
Antiepileptics: other/unknown	40
Antipsychotics	
Amisulpride	20
Aripiprazole	37
Clozapine	33
Olanzapine	234
Phenothiazines (chlorpromazine, trifluoperazine etc)	111
Quetiapine	752
Risperidone	132
Ziprasidone	8
Antipsychotics: other/unknown	53
CNS depressants	
Barbiturates	11
Benzodiazepines	1324
Chloral hydrate	1
Doxylamine	100
Hypnotic/sedative: over-the-counter	6
Melatonin	133
Zolpidem	39
Zopiclone	97
Hypnotic/sedative: other/unknown	6
CNS stimulants	
Amphetamines (for ADHD, not street drugs)	190
Caffeine	70
CNS – miscellaneous	
Antidementia agents (donepezil, galantamine, memantine, rivastigmine)	34
Antiparkinsonian agents	58
Baclofen	60
Clonidine	99
Lithium	126
CNS drugs: other/unknown	3
COUGH/COLD PREPARATIONS	
Antitussives	53
Cough/cold preparations with paracetamol	239
Cough/cold preparations without paracetamol/aspirin	178
Dextromethorphan	22
Pseudoephedrine	22
Throat lozenges with local anaesthetic	5

Throat lozenges without local anaesthetic	13
DRUGS USED IN ADDICTIVE DISORDERS	
Antismoking products (nicotine gum, lozenges, patches; e-cigarettes; varenicline)	81
Buprenorphine	31
Bupropion	4
Disulfiram	5
Methadone	35
Naltrexone	7
EAR PREPARATIONS	
Ear drops	57
Ear ointment	4
EYE PREPARATIONS	
Contact lens preparations	18
Eye drops: imidazoline-based	6
Eye drops: other/unknown	87
Eye ointment	13
GASTROINTESTINAL PREPARATIONS	
Antacids	58
Antidiarrhoeals: diphenoxylate/atropine	1
Antidiarrhoeals: loperamide	21
Antiemetics	119
Antispasmodics (hyoscine butylbromide etc)	28
Barium (soluble salts)	2
Histamine H ₂ - antagonists (cimetidine, ranitidine etc.)	42
Laxatives	179
Proton pump inhibitors (omeprazole, pantoprazole, esomeprazole etc.)	301
Gastrointestinal preparations: other/unknown	66
METABOLISM	
Electrolytes/minerals	
Calcium salts	75
Fluoride	5
Iron (not multivitamins)	132
Potassium salts	38
Electrolytes: other/unknown	62
Vitamins	
Folic acid	48
Vitamin B group	44
Vitamin C	42
Vitamin D	245

Vitamins compound with iron	146
Vitamins compound without iron	182
Vitamins: other	16
Other metabolic	
Androgenic and anabolic agents	9
Antihormones (tamoxifen, cyproterone, flutamide etc.)	22
Antithyroid preparations	6
Bisphosphonates	7
Corticosteroids	307
Diet aids/anorectics – over-the-counter	16
Diet aids/anorectics – prescription	36
Hypoglycaemics, injection: glucagon-like peptide 1 (GLP-1) analogues	11
Hypoglycaemics, oral: alpha glucosidase inhibitors (acarbose etc)	1
Hypoglycaemics, oral: biguanides (metformin)	139
Hypoglycaemics, oral: combination products (metformin/glibenclamide, metformin/rosiglitazone, metformin/sitagliptin etc)	18
Hypoglycaemics, oral: DPP-4 inhibitors (sitagliptin, vildagliptin etc)	12
Hypoglycaemics, oral: glitazones	1
Hypoglycaemics, oral: sodium-glucose co-transporter (SGLT) inhibitors (canagliflozin, dapagliflozin, empagliflozin etc)	12
Hypoglycaemics, oral: sulphonylureas (glibenclamide, gliclazide, glipizide etc)	51
Insulin	150
Oestrogens/progestogens (not oral contraceptives)	20
Oral contraceptives: oestrogen and progestogen	214
Oral contraceptives: progestogen only	36
Thyroxine	138
Thyroid preparations: other/unknown	5
Hormones: other/unknown	20
Metabolic agents: other/unknown	3
NONSTEROIDAL ANTI-INFLAMMATORY DRUGS AND GOUT MEDICATIONS	
Allopurinol	27
Celecoxib	28
Colchicine	15
Diclofenac	156
Ibuprofen	1242

Ibuprofen plus codeine	71
Indomethacin	18
Mefenamic acid	28
Naproxen	51
NSAIDs: other/unknown	47
NOSE PREPARATIONS	
Nose drops/sprays: imidazoline-based	18
Nose drops/sprays: other/unknown	20
Nasal preparations: other/unknown	7
STREET DRUGS	
Amphetamine and related drugs	89
Amyl nitrite and other volatile nitrites	10
Cannabinoids, synthetic (Spice, Kronic, K2, Jungle Fever, Northern Lights, Marley etc)	24
Cathinones (mephedrone, methylone etc)	3
Cocaine	17
Ecstasy and other hallucinogenic amphetamines	62
Gamma hydroxybutyrate	24
Hallucinogenics: other/unknown	2
Heroin	22
Inhalant abuse (chroming)	10
Ketamine/methoxetamine	10
LSD	5
Marijuana	52
Street drugs: other/unknown	61
TOPICAL PREPARATIONS	
Acne preparations	25
Antipruritics (calamine lotion etc)	31
Capsaicin	14
Chest rubs	152
Hydrogen peroxide	16
Lice/scabies preparations	64
Liniments	146
Nappy rash products	311
Topical antibiotics	29
Topical antifungals	106
Topical antiseptics (handsanitiser etc)	716
Topical antivirals	9
Topical corticosteroids	194
Wart/corn preparations	18
Topical preparations: other/unknown	93
MISCELLANEOUS MEDICINE/DRUG CALLS	
Antineoplastics	20

Chloroquine/hydroxychloroquine	14
Diagnostic agents	2
Herbal preparations	180
Homeopathic preparations	42
Immunosuppressants	33
Methotrexate	27
Muscle relaxants: other	7
Quinine	3
Unknown tablets/capsules	63
Urinary alkalinisers	1
Urinary antiseptics	4
Vaccines/toxoids/antivenoms	28
Vaporiser fluids and inhalants	190
Other over-the-counter-medicines	48
Other prescription medicines	69