



GIFTINFORMATIONSCENTRALEN
SWEDISH POISONS INFORMATION CENTRE



Swedish Poisons Information Centre Annual Report 2017

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Preface

The Swedish Poisons Information Centre received 94 599 inquiries during 2017, an increase with 4% since last year and an all-time high. Calls from health care professionals constitute the main part of the increase. Seen over the last ten years calls from this group have increased with 75%. The inquiries are often of high clinical complexity, requiring skilled and detailed advice from both physicians and pharmacists working in the telephone service.

Regarding specific poisonings the paracetamol formulation with modified release (665 mg tablets) is of particular interest. The Swedish Poisons Information Centre has seen a significant increase of such overdoses over the last years. These overdoses have proven to be a serious problem since the standard antidote treatment protocol has been insufficient, resulting in several cases of liver damage in spite of traditional treatment. The signal from the Poisons Centre was reported to the EU Pharmacovigilance Committee (PRAC). In February 2018, the European Commission adopted a binding decision on the withdrawal of this formulation of paracetamol. It will therefore be taken off the Swedish market in June 2018.

An increase in the number of incidents with the toxic antifreeze ethylene glycol has been observed. This applies both to accidental ingestions and suicide attempts in adults. In an attempt to reverse this worrying trend a joint cooperation with the Swedish Chemicals Agency, trade organisations and suppliers has been undertaken.

A new platform for the database "Antidote Register" was launched in 2017. This open register is used by physicians and nurses to see the available amount of antidotes at each emergency hospital in Sweden. The database is now more easily accessible and generally modernised, e.g. adapted to mobile phones and tablets and it can be reached from our website for physicians www.giftinfo.se. Our websites have also passed external evaluation during 2017, showing very good customer satisfaction.

Nine scientific works carried out at the Poisons Centre were presented during the international EAPCCT Congress in Basel. An astonishing achievement considering the heavy work load that is imposed on all co-workers involved in the telephone service.

Stockholm, March 2018

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Unit Director

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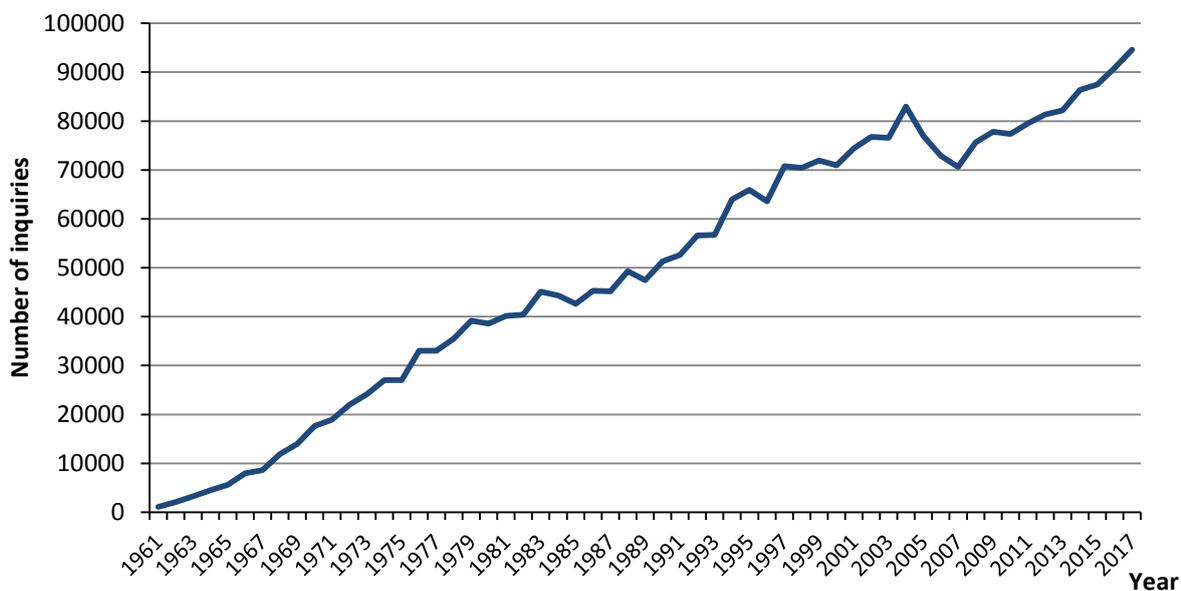
Telephone Service

The main responsibility of the Swedish Poisons Information Centre is to give advice to healthcare professionals and general public in cases of acute poisoning with e.g. pharmaceuticals, chemical products or biological toxins.

The information is provided by telephone 24 hours a day, every day of the year. The telephone service is connected to the national emergency number 112 and it is always manned with pharmacists and one anaesthetist on duty call.

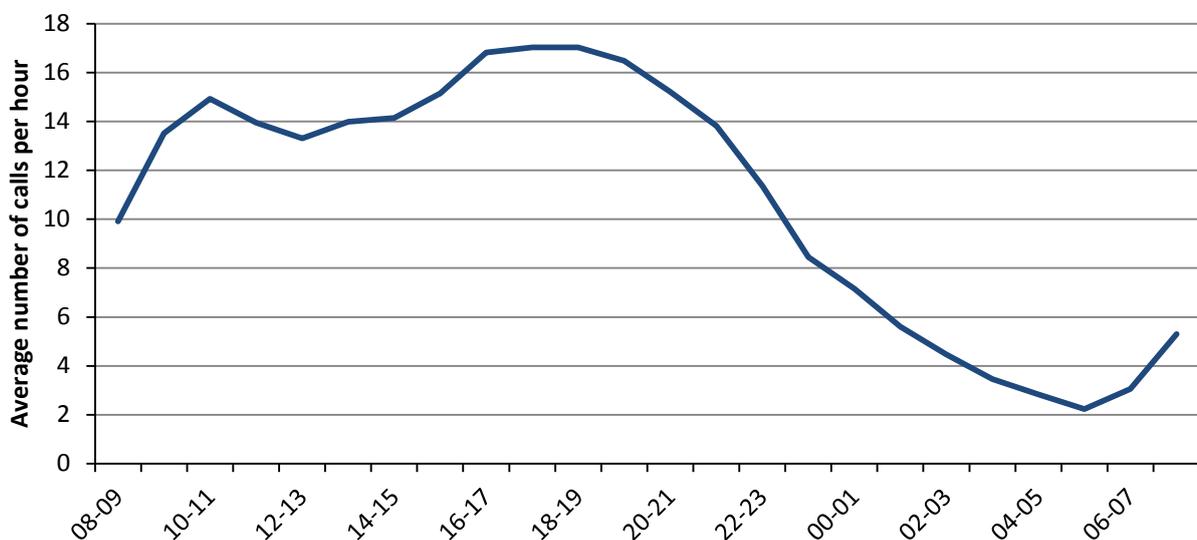
The development in number of calls from 1961 to 2017 is illustrated in Figure 1.

Figure 1. Development in number of calls to Swedish Poisons Information Centre 1961-2017



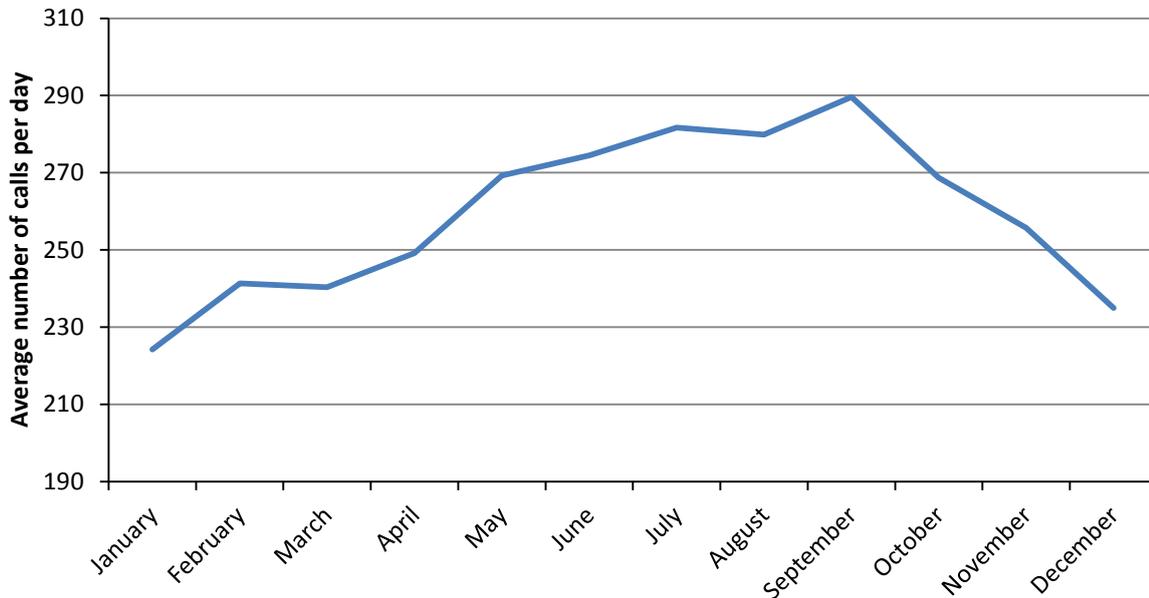
The average number of calls per 24-hour was 259, with the main peak of incoming calls between 4 and 8 p.m., and a second peak around 10 a.m. The 24 hours variation in number of calls is shown in Figure 2.

Figure 2. Average number of calls per hour during the day



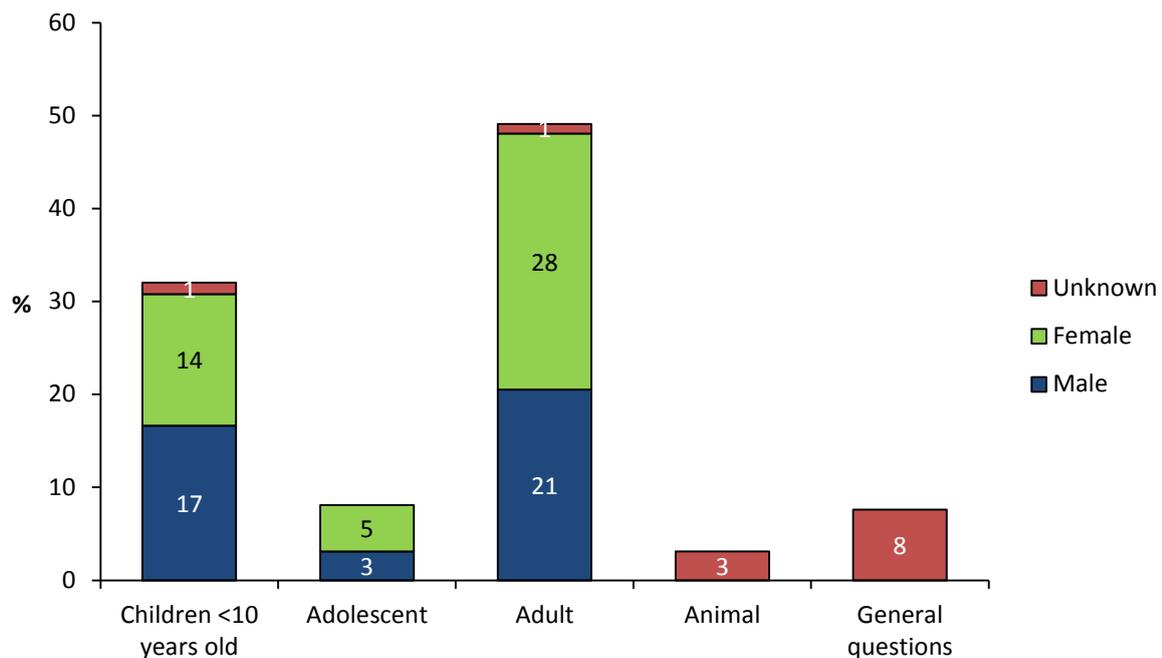
Generally, the most intense period for the Poisons Centre is summer to early fall, which can be seen in Figure 3. This is the season when both children and adults are exposed to berries, mushrooms, wasps and snakes to a higher extent. In 2017, the average number of calls per 24 hours during May to September was 279. The highest number of calls was noted in September, 948, because of the favourable weather conditions for mushrooms.

Figure 3. Season variation, average number of calls per day



Of the 94 599 calls the Centre received during 2017, 84 467 concerned humans and 2933 animals. The remaining 7 199 calls were requests for general information, not connected to specific cases. The distribution is illustrated in Figure 4.

Figure 4. Distribution of received calls



(n=94 599)

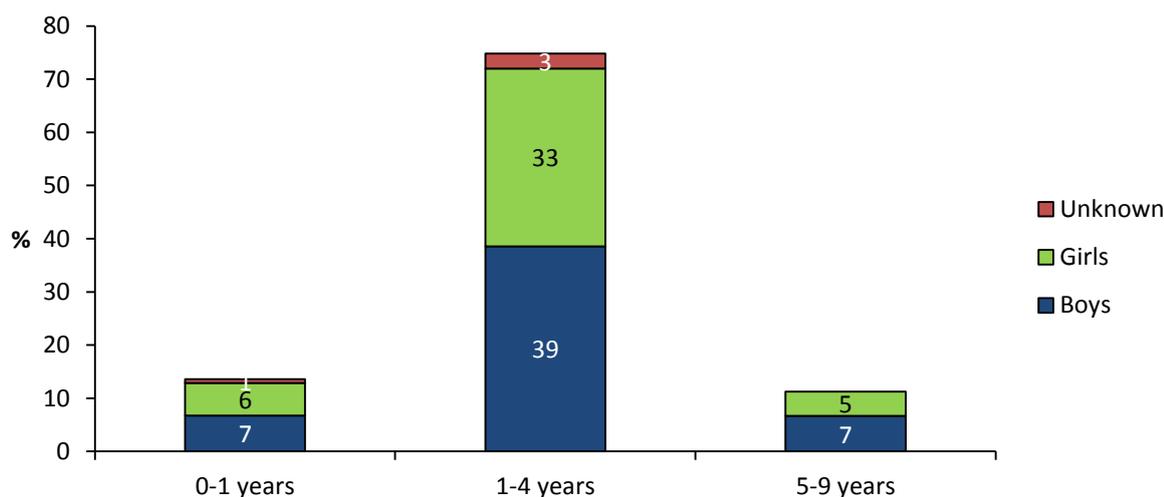
Human Poisonings/Poisoning Incidents

A majority of the 84 467 calls concerning human poisonings/incidents came from general public (65 %), 32 % from health care professionals and only a few percent came from other sources.

Poisoning incidents among children <10 years

The Poisons Centre received 30 288 calls concerning children <10 years. This involved 75 % children aged 1-4 years, and boys more often than girls (Figure 5). Most of the poisoning incidents occurred at home. Ingestion was the main route of exposure (89 % of the cases).

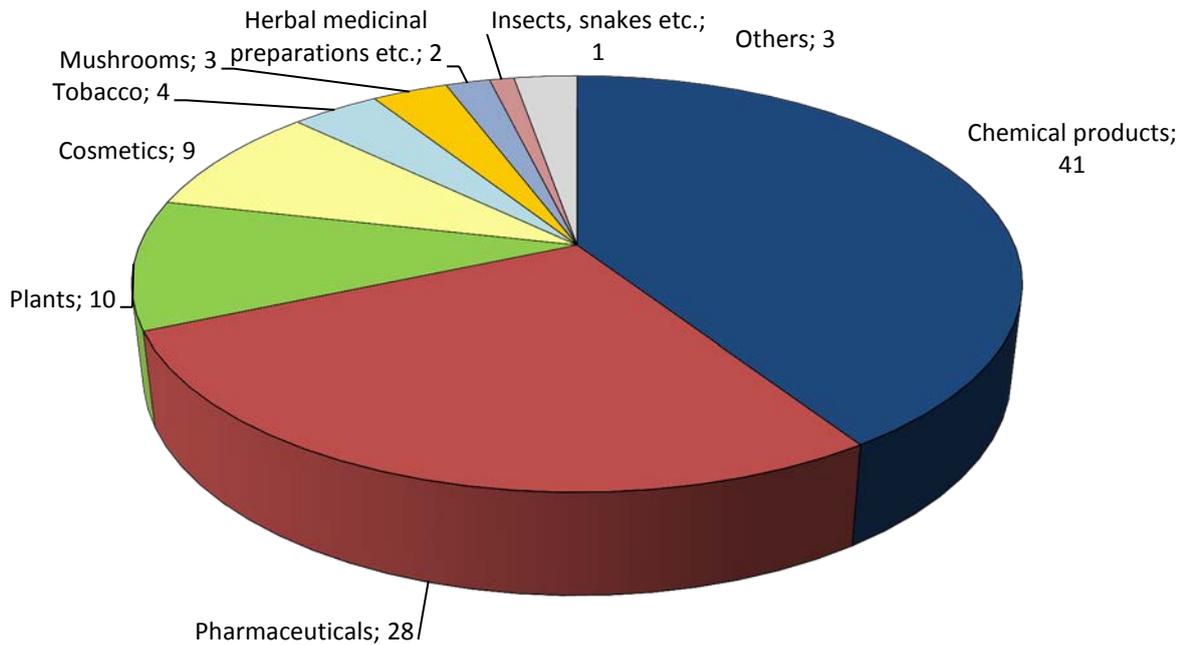
Figure 5. Incidents – age/gender (%), children < 10 years



(n=30 288)

Half of the inquiries concerned children who had tasted chemical products, mostly household products or products for personal care, 28 % involved pharmaceuticals and 10 % plants. The remaining inquiries involved tobacco, mushrooms, insects and snakes (Figure 6).

Figure 6. Poisoning agent (%), children <10 years



(n=30 288)

Chemicals/chemical products - children <10 years

The chemicals/chemical products most frequently involved in poisoning incidents among children <10 years are listed below (% of total number of inquiries about chemical products in brackets)

- **Cleaning products** (4 %). E.g. dishwasher detergents (9 %), washing-up liquids (5 %), laundry powder, wc-blocks/cleaning, and all-purpose cleaners.
- **Disinfectants** (5 %). E.g. products containing ethanol/isopropanol.
- **Pesticides** (4 %). E.g. insecticides, rodenticide.
- **Household products** (4 %). E.g. acetic acid, table salt.
- **Batteries** (4%). E.g. button batteries, cylindrical batteries.

The most common cosmetics and products for personal care involved in incidents were skin lotions, nail care products containing acetone/acetate, dental care products with fluoride and liquid soap/shampoo.

Out of 14 962 paediatric poisoning incidents involving chemical products or cosmetics, the estimated risk was minor in 88 % of the cases and could be dealt with at the accident site. The remaining 12 % were recommended to seek medical care, or advice was given directly to health care personnel treating the patient.

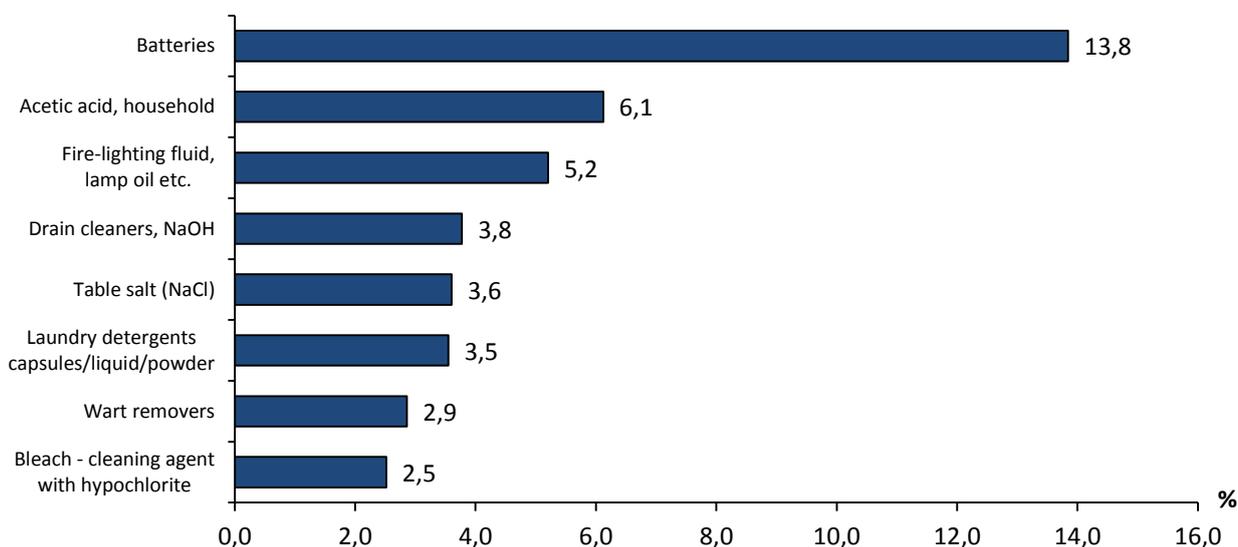
The most common poisoning incident that led to a recommendation to seek medical care was swallowing button batteries. A button battery can cause severe damage if it gets stuck in the oesophagus.

In 37 % of the calls that led to an advice to seek medical care the child had ingested a corrosive product (e.g. 24 % household acetic acid, drain cleaners, wart removing agents, bleaching/cleaning

agents with hypochlorite, descaling products) or a product containing petroleum distillate (e.g. fire lighting fluid, lamp oil, fuel, white spirit), which can cause chemical pneumonitis if aspirated.

The most common chemical products where the incidents were judged to be hazardous are listed in Figure 7.

Figure 7. Most common chemicals/chemical agents or cosmetic leading to medical care (% of the total number of chemical products leading to medical care) children < 10 years



(n=1 748)

Pharmaceuticals – children <10 years

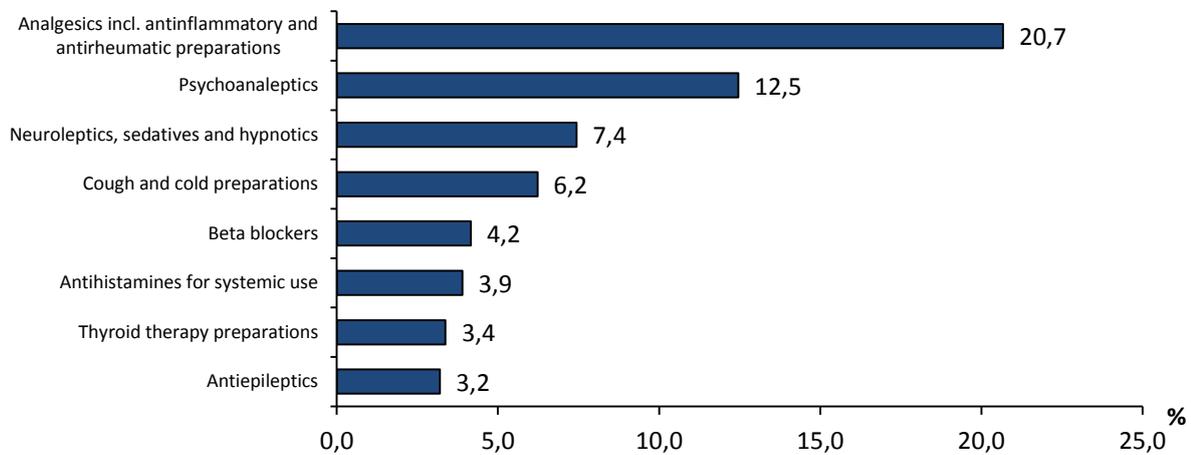
The pharmaceuticals that were most frequently involved in poisoning incidents in children <10 years are listed below (% of total number of inquiries about pharmaceuticals in brackets).

- **Analgesics, including anti-inflammatory and anti-rheumatic pharmaceuticals.** (24%). E.g. paracetamol (13 %), ibuprofen (5 %), diclofenac.
- **Cough preparations** (8 %). E.g. ethylmorphine combinations, bromhexine.
- **Vitamins** (7 %). E.g. vitamin D.
- **Dermatological preparations** (6%). E.g. hydrocortisone.
- **Psychoanaleptics including ADHD pharmaceuticals, antidepressants** (6%). E.g. methylphenidate.
- **Antihistamines for systemic use** (5 %). E.g. desloratadine, loratadine.

The risk of poisoning was considered minor in 86% of the 8 391 inquiries related to pharmaceuticals. Common incidents, usually harmless, involve vitamins, birth control pills, and cortisone preparations. This is true also for natural remedies (which are not included in the above list).

In 14 % of the inquiries the caller was recommended to seek medical care or advice was given directly to health care personnel treating the patient. The most common pharmaceuticals in these cases are listed in Figure 8. Quite toxic pharmaceuticals, such as malaria treatment, heart- and blood pressure medication or prescription pain medication, do not appear in this figure, as the total number of poisoning incidents with these pharmaceuticals was low

Figure 8. Most common pharmaceuticals leading to medical care (%), children < 10 years.



(n=1 156)

Plants – children <10 years

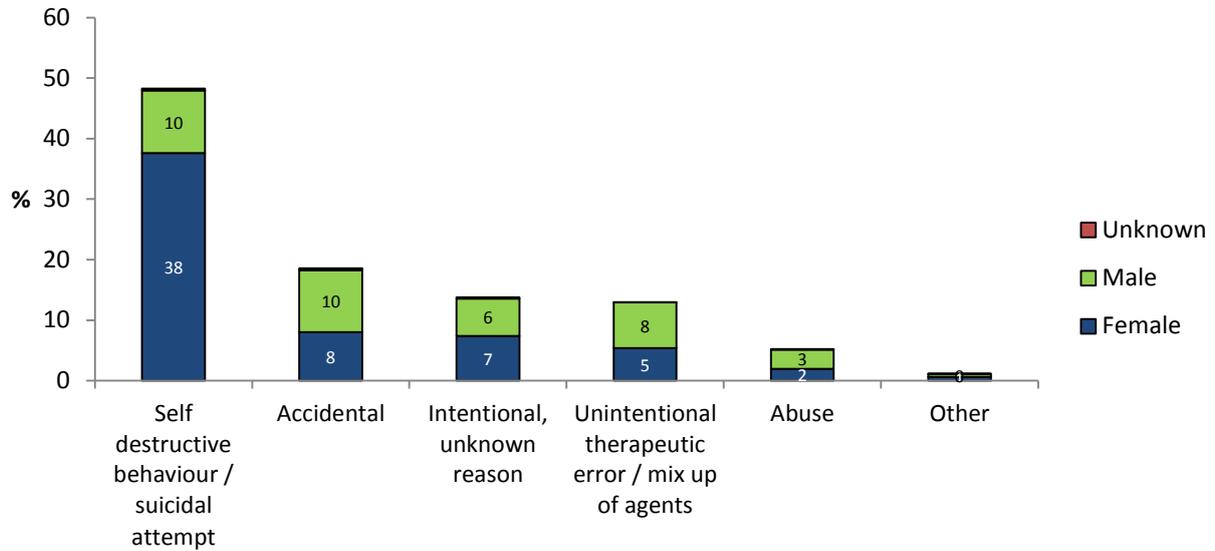
Child poisoning incidents involving plants are usually harmless and only in 4 % of the 3 046 inquiries the caller was recommended to seek medical care or advice was given directly to health care personnel treating the patient.

The most common incidents with poisonous plants involved Lily of the valley, laburnum flower, yew, monkshood, mezezon and foxglove. Other incidents that caused symptoms, although not poisonings, were cases where children had tasted plants with irritating sap (e.g. Zamioculcas), or had got irritating sap in the eyes.

Poisoning incidents in adolescents 10-19 years old

The total number of inquiries to the poisons centre concerning adolescents 10-19 years was 7 725. Of these inquiries around 50 % related to attempted suicide or self-harm, in most cases with pharmaceuticals. In additionally 14% of the cases the overdose was intentional, but with unclear purpose. A fifth of the incidents were due to accidents and 5 % to abuse. Figure 9 shows the different reasons for poisoning.

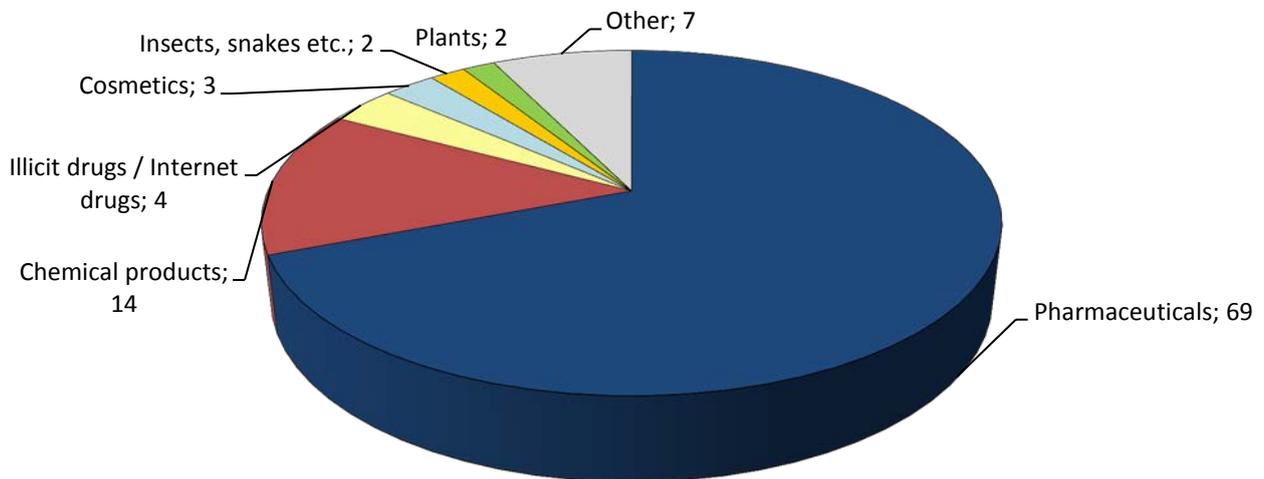
Figure 9. Reason for poisoning, adolescents 10-19 years old



(n=7 725)

In the adolescent group, poisoning with pharmaceuticals was most common and amounted to approximately two thirds of the inquiries. Chemicals/chemical products accounted for 14 % of the calls, while other poisoning agents were used less commonly (Figure 10).

Figure 10. Poisoning agent, adolescents 10-19 years old



(n=7 725)

Pharmaceuticals – adolescents 10-19 years

The pharmaceuticals, including herbal medicine preparations, most frequently involved in poisoning incidents among adolescents 10-19 years old are listed below (% of total number of inquiries about pharmaceuticals in brackets):

- **Analgesics, including anti-inflammatory and anti-rheumatics (31 %).**
E.g. paracetamol (18 %), ibuprofen (7 %), tramadol.
- **Psychoanaleptics, including ADHD pharmaceuticals, antidepressants (25 %).**
E.g. methylphenidate (6 %), sertraline (6 %), fluoxetine, lisdexamphetamin.
- **Neuroleptics, sedatives, hypnotics (17 %).** E.g. hydroxyzine, propiomazine, melatonin.
- **Antihistamines for systemic use (9 %).** E.g. promethazine (5 %), alimemazine.
- **Antiepileptics (3 %).** E.g. lamotrigine.

Of the 5 341 inquiries in this group 69 % were recommended to seek medical care or advice was given directly to health care personnel treating the patient. For the remaining 31 % the risk was low. The pharmaceuticals listed above were those most frequently causing a need for hospital care.

The inquiries about illicit drugs and internet drugs concerning this age group amounted to 275. Of those, 83 % were recommended to seek medical care or the advice was given directly to health care personnel treating the patient.

Chemicals/chemical products – adolescents 10-19 years

The chemicals/chemical products most frequently involved in poisoning incidents among adolescents 10-19 years old, are listed below (% of total number of inquiries about chemical products in brackets)

- **Cleaning products (25 %).** E.g. washing-up liquids, all-purpose cleaner, dish washer detergent.
- **Fuel (9 %).** E.g. petrol (6 %), fire-lighting fluid.
- **Gases (9 %).** E.g. fire gases, carbon monoxide/exhaust fumes.
- **Disinfectants (8 %).** E.g. products containing ethanol/isopropanol.

Inquiries about cosmetics/products for personal care mostly involved nail, hair and skin care products, and perfume. Incidents with these products are mostly harmless, but eye exposure to hair colouring may constitute a risk.

The risk of poisoning was considered minor in 63 % of the 1 271 inquiries, and could be cared for at the site of the incidence. The remaining 37 % were recommended to seek medical care, or advice was given directly to health care personnel treating the patient. The most common chemical products that lead to medical attendance in this age group were corrosive products (e.g. cleaning/bleaching agents with hypochlorite, acetic acid (conc. 24 %), chemicals used for swimming pool care), petrol (which can cause pneumonia if aspirated and also constitutes a risk if inhaled) disinfectants with ethanol/isopropanol, and gases (e.g. carbon monoxide, fire gases).

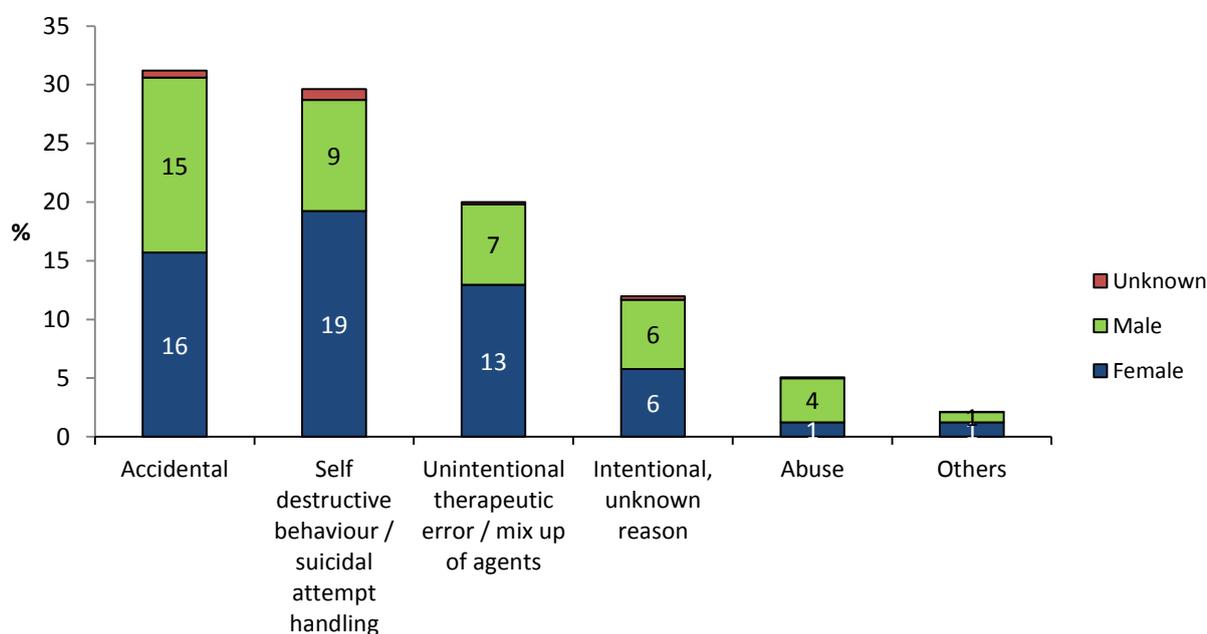
Most of the incidents were caused by mistakenly swallowed chemical products/cosmetics or personal care products. In 11 % of the cases the chemical products were ingested in a self-harming purpose. Incidents caused by eye contact or inhalation were also relatively common.

Poisonings/poisoning incidents in adults

Among adults various types of accidental exposures, including workplace accidents and incidents during do-it-yourself activities, caused one third of the 46 454 inquiries (Figure 11). However, 47 % of the most serious poisonings are found among the intentional incidents; including suicide attempts and abuse. These poisonings were caused mainly by using pharmaceuticals or illicit drugs/internet drugs.

Close to one fifth of the inquiries concerned therapeutic errors/mix up of agents. In this group unintentional overdosing of pharmaceuticals at home dominated (mostly double dose), which rarely lead to poisoning.

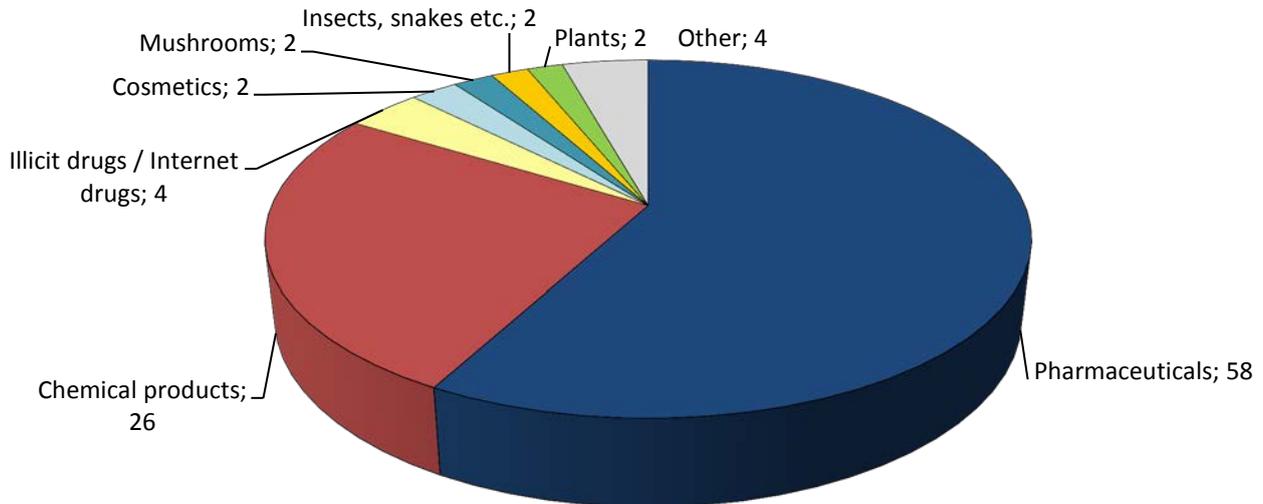
Figure 11. Reason of poisoning (%), adults



(n=46 454)

Over half of all adult poisoning inquiries were related to pharmaceuticals. Inquiries about chemicals/chemicals products constituted 25%, illicit drugs/internet drugs 4 %, while plants, cosmetics, insects, snakes and mushrooms caused a minor part of all incidents (Figure 12).

Figure 12. Poisoning agent (%), adult



(n=46 454)

Pharmaceuticals – adults

The pharmaceuticals, including herbal medicine preparations, most frequently involved in poisoning incidents among adults are listed below (% of total number of questions about pharmaceuticals in brackets)

- **Neuroleptics, sedatives, hypnotics** (22 %). E.g. zopiclone (4 %), propiomazine (3%), quetiapine, zolpidem.
- **Analgesics, including anti-inflammatory and anti-rheumatic pharmaceuticals** (23 %). E.g. paracetamol (11 %), ibuprofen (3 %), tramadol.
- **Psychoanaleptics, including antidepressants, ADHD pharmaceuticals** (12 %) E.g. sertraline, methylphenidate, venlafaxine.
- **Antihistamines** (7 %). E.g. promethazine (4%), alimemazine.
- **Antiepileptics** (6 %). E.g. pregabalin, lamotrigine.

Among the 26 896 inquiries concerning adults, 62 % were recommended to seek medical care, or advice was given directly to health care personnel treating the patient. In this group there were many serious cases of overdosing. For the remaining 38 %, the risk of poisoning was considered relatively low. Many of the harmless incidents were related to persons who accidentally had taken a double dose of a medicine.

In adults, the number of inquiries related to internet drugs or illicit drugs amounted to 1 761. Out of these, 83 % were recommended to seek medical care or advice was given directly to medical personnel treating the patient.

Chemicals/chemical products – adults

The chemicals/chemical products most frequently involved in poisoning incidents among adults are listed below (% of total number of questions about chemical products in brackets):

- **Cleaning products** (29 %). E.g. washing-up liquid, cleaning/bleaching agents with hypochlorite, drain cleaners with NaOH, descaling agents with acid.
- **Gases** (14 %). E.g. fire gases, carbon monoxide/exhaust fumes, ammonia.
- **Disinfectants** (8 %). E.g. products containing ethanol/isopropanol.
- **Car products** (7 %). E.g. antifreeze/brake fluids, lubricants.
- **Fuel** (7 %) E.g. petrol, fire-lighting fluid/lamp oil.

Inquiries about cosmetics/products for personal care mostly involved skin care products, hair colouring agents, nail care products and preparations for treating warts. Incidents with these products are mostly harmless, but anti-wart agents can be corrosive, and eye exposure to hair colouring or some nail care products may constitute a risk.

The risk of poisoning was considered relatively low in 63 % of the 13 131 inquiries about adult exposures and care at the incident site was sufficient. For the remaining 37 % the caller was recommended to seek medical care, or advice was given directly to health care personnel treating the patient. The products that most frequently required medical care were those containing ethanol/isopropanol (e.g. disinfectants, solvents), gases (e.g. fire gases, carbon monoxide/exhaust fumes, irritant gases), corrosive products (cleaning/bleaching agents with hypochlorite, drain cleaners, alkaline cleaning agents, descaling agents) and anti-freeze agents containing ethylene glycol. In cases where disinfectants or antifreeze agents caused severe poisoning requiring hospitalization, the products had in most cases been consumed as a substitute for alcohol.

In slightly above half of the inquiries related to chemicals, the route of exposure were through inhalation or eye contact. Ingestion of a chemical product by mistake was also relatively common.

Animal poisonings/poisoning incidents

Human poisonings are always prioritized, but during office hours GIC also gives advice in poisoning cases concerning animals (contingent available information).

Out of the 2 933 calls, 84 % concerned dogs, 14 % to cats and 3 % to other animal species.

A scarce majority of the inquiries involved chemical products (mainly pesticides), followed by pharmaceuticals and 17% plants. The risk of poisoning was considered relatively low in 73 % of the inquiries. The remaining 27 % were recommended veterinary contact or advice was given directly to a veterinary treating the animal. In this group 13 % had ingested pesticides (particularly rodenticides). 9 % were dogs or cats that had ingested anti-inflammatory or anti-rheumatic drugs and 5 % were dogs that had eaten chocolate.

Sources of information

Toxicological and medical data is collected from different sources, processed by Poisons Centre staff, and integrated into an internal database, to be used for the advice given in the telephone service. Sources include articles published in international medical and toxicological literature, hospital case records, as well as information about newly registered pharmaceuticals. The means and ways of poisoning are continuously changing, as well as treatment methodology, which makes it very important to continuously revise the information in the Poisons Centre database.

Substance monographs

A substantial part of the database consists of substance monographs focusing on toxicity, symptoms and treatment in poisonings. The ambition is to keep the monographs up-to-date, especially those concerning pharmaceuticals, chemical substances and biological toxins often involved in poisonings.

Discharge records from hospitals

One important source in the telephone service is the discharge records (summary of medical records) that the hospitals on a voluntary basis send to the Poisons Centre. Especially important is the information about new substances on the market, both pharmaceuticals and chemicals. During 2017 the Poisons Centre received about 6000 copies of discharge records of which 80 % involved pharmaceuticals and the remaining chemicals or biological toxins.

Product information

Incidents with chemical products are relatively common. In 2013, The Poisons Centre was formally appointed as the body responsible for receiving information about the chemical composition of products, according to EU Regulation 1272/2008 (CLP). The information received is used for formulating preventative and curative measures, in particular in the event of emergency health response.

About 13,000 new product notifications or updates were handled at the Poisons Centre in 2017.

Follow-ups and projects

Follow-ups

Poisonings with newly registered pharmaceuticals and chemical products, or special cases/conditions are documented and analysed routinely. In addition the following have been given extra attention in 2017:

- extravasal injection and intravenous dosing errors
- European adder –cases treated with antivenom, especially repeated doses
- internet drugs – new psychoactive substances
- clonidine – dosing errors in children
- metformin
- paracetamol – depot formulation
- guanfacine

Projects

1. High insulin therapy

The project aims to collect available information on severe poisoning with calcium flow inhibitors and / or beta blockers. The project retrieves information via medical records (ethical approval) and follows up on treatment and results, especially considering the fact that we have implemented early-stage high-dose insulin therapy (in accordance with international recommendations)¹

2. Antidote register

The project has resulted in a new platform for the Antidote register launched in 2017. The register is used by physicians to see what antidotes, and how much, are available. The database is now more easily accessible and generally modernised e.g. adapted to mobile phones and tablets.

3. Corrosive alkaline drain cleaning products

An ongoing project performed in a number of years in collaboration with the Swedish Chemicals Agency and trade associations, e.g. A:I:S:E: (the International Association for Soaps, Detergents and Maintenance Products), with the aim to decrease the number of incidents with corrosive drain cleaners.

4. Newly registered pharmaceuticals – overdoses

Cases of overdose with pharmaceuticals registered during the past five years are under specific surveillance at the Poisons Centre. Discharge records are assessed and evaluated, and if determined to contain valuable information summarized and recorded. Pharmaceutical companies have the opportunity to request case reports connected to their products from this material.

¹ St-Onge *et al.* Experts Consensus Recommendations for the Management of Calcium Channel Blocker Poisoning in Adults. *Critical Care Med.* 2017;Mars 45(3):e306-e315

5. Does the Poisons Centre receive the right calls?

The purpose of this project was to identify which calls reached the Poisons Centre, if people needing the service did and vice versa, and also find ways to optimise the use of the poisons Centre's services.

6. Website survey

A survey regarding the Poisons Centre's websites, www.giftinfo.se and www.giftinformation.se, has been completed during the period 1 October 2016 to 30 September 2017 with the aim to understand the needs of the users and to identify possible improvements.

The results of the survey showed high ratings from the users.

Assignments and collaborations

National

The Poisons Centre, in addition to internal collaboration with the Swedish Medical Products Agency, collaborates with a number of national organisations like the Public Health Agency of Sweden, the Swedish Chemicals Agency and the National Board of Health and Welfare. Other assignments on a national basis are e.g. providing specialist education of physicians in training (Acute Poisoning and Metabolic Syndromes), providing expert educational/informative texts or lectures, and expert roles in publication reviews.

International

- Board member of the European Association of Poisons Centres and Clinical Toxicologists (EAPCCT), and member of its scientific committee.
- Representative in EAPCCT working group on the harmonisation of information about chemical mixtures to be submitted to Poison Centres in accordance with the Regulation (EU) 1272/2008, Classification, Labelling and Packaging (CLP)
- Member of the editorial board for the journal of Clinical Toxicology, and referee assignments for the same journal.
- Representative in the European Chemical Industry Council (CEFIC) ICE Integration group. In collaboration with IKEM –Innovation and Chemical Industries in Sweden.

Publications

1. Forsberg M, Forsberg S, Edman G, Höjer J. No support for lipid rescue in oral poisoning. A systematic review and analysis of 160 published cases. *Hum Exp Toxicol* 2017;36:461-6
2. Höjer J. Alkohol ketoacidosis – väl dokumenterad men tämligen okänd diagnos. *Läkartidningen* 2017;114:1640-2
3. Ilicki J, Höjer J, Djärv T. Massive apixaban overdose a comparison of three cases. *Am J Emerg Med* 2017; epub ahead of print
4. Salmonson H, Sjöberg G, Brogren J. The standard treatment protocol for paracetamol poisoning may be inadequate following overdose with modified release formulation: a pharmacokinetic and clinical study of 53 cases. *Clin Toxicol* 2017; 23 jun. epub ahead of print
5. Personne M, Hultén P, Arvidsson S. Uppdaterade riktlinjer för behandling av huggormsbett. *Läkartidningen* 2017;114: EMWP.
6. Lindqvist E, Edman G, Hollenberg J, Nordberg P, Ösby U, Forsberg S. Intensive care admissions due to poisoning. *Acta Anaesthesiol Scand* 2017;61:1296-04
7. Beck O, Bäckberg M, Signell P, Helander A. Intoxications in the STRIDA project involving a panorama of psychostimulants, MDPV copycats. *Clin Toxicol* 2017; epub ahead of print
8. Bäckberg M, Jönsson KH, Beck O, Helander A. Investigation of drug products received for analysis in the Swedish STRIDA project. *Drug test Anal* 2017; epub ahead of print
9. Helander A, Bäckberg M, Signell P, Beck O. Intoxications involving acrylfentanyl and other novel designer fentanyls - results from the STRIDA project. *Clin Toxicol* 2017; epub ahead of print
10. Bäckberg M, Tworek L, Beck O, Helander A. Analytically confirmed intoxications involving MDMB-CHMICA from the STRIDA project. *J Med Toxicol* 2017; epub ahead of print
11. Helander A, Bäckberg M. New psychoactive substances (NPS) - the hydra monster of recreational drugs. *Clin Toxicol* 2017; epub ahead of print
12. Vardavas CI, Girvalaki C, Annas A, Plackova S, et al. Characteristics and outcomes of e-cigarette exposure reported to 10 European poison centres. *Toxicol Induc Dis* 2017; epub ahead of print
13. Personne M. A 10-fold bolus dose of N-acetylcysteine with fatal consequences. *Clin Toxicol* 2017; epub ahead of print
14. Gedeborg R, Personne M, et al. Increased availability of paracetamol in Sweden and incidence of paracetamol poisoning. *Pharmacoepidemiol Drug Saf* 2017;26:518-27.
15. Lindeman E, Baer Eriksson L, Thorsson M, Nordmark Grass J. Högdos insulin-euglykemi terapi vid svår toxisk myokardpåverkan. *Läkartidningen* 2017;114:EPDS
16. Lindeman E. Målstyrd antidotterapi vid reversering av dabigatran. *Läkartidningen* 2017;114:ESF3

Other Publications

Book chapter:

1. Internmedicin, Liber, 2018. Personne M. Förgiftningskapitlet. Lindeman E. Missbrukskapitlet
On press

Published abstracts:

1. Rafstedt K, Höjer J, Olsson E, Feldthusen J. Acute valacyclovir overdose causing renal failure and neurotoxicity. *Poster at the XXXVII Congress of EAPCCT, Basel, May 2017*
2. Östberg L, Höjer J. Acute tenofovir overdoses caused benign symptoms – a cases series. *Poster at the XXXVII Congress of EAPCCT, Basel, May 2017*
3. Annas A, Norrvik F, Johansson LM. Alphachloralose poisoning in dogs– a case series. *Poster at the XXXVII Congress of EAPCCT, Basel, May 2017*
4. Bäckberg M, Johansson N, Beck O, Helander A. Emergence of fentanyls on the Swedish NPS market – analytically confirmed intoxications. *Poster at the XXXVII Congress of EAPCCT, Basel, May 2017*
5. Franzén L, Beck O, Helander A, Bäckberg M. Acute intoxications involving alpha-pyrrolidinobutiophenone (α -PBP) - Results from the Swedish STRIDA project *Poster at the XXXVII Congress of EAPCCT, Basel, May 2017*
6. Franzén L, Didner C, Hultén P. Increased migration to Sweden and increased incidence of isoniazid poisonings. *Short oral at the XXXVII Congress of EAPCCT, Basel, May 2017*
7. Appelqvist Å, Lindeman E. Increased dose of NAC, fomepizole and dialysis in a case of massive paracetamol ingestion. *Poster at the XXXVII Congress of EAPCCT, Basel, May 2017*
8. Carlvik B, Lindeman E. Most amatoxin poisonings in Sweden occur in persons of non-Swedish background. *Short oral at the XXXVII Congress of EAPCCT, Basel, May 2017*
9. Lindeman E, Tellerup M, Nordmark Grass J. High in-hospital death rate from calcium channel blocker and beta blocker poisonings. *Poster at the XXXVII Congress of EAPCCT, Basel, May 2017*