ORIGINAL ARTICLE

Estonian Experience on Establishment of a Modern National Poison Information Centre: One-year Profile of Phone Calls in 2012

MARE ODER[1,*], KRISTIINA PÕLD[1,2]

[1] Poisoning Information Centre, Tallinn, Estonia
[2] Department of Emergency Medicine, North Estonian Medical Centre, Tallinn, Estonia

Abstract

Background: Initiating a National Poisoning Information Centre (PIC) in Estonia took about 12 years of challenging work on research, training and attracting governmental support and funding. In this study we described the establishment process and the profile of phone calls in the first year which the PIC started to be available full time (24h/day 7days/week).
Methods: This was a descriptive retrospective study. Relevant documents from 2000-2012 were reviewed. The documents were categorized into 5 main issues against establishment of PIC. Data of all inquiries related to toxic agent exposures regarding patient's demographic, intention of poisoning and type of toxic substances in 2012 were collected. The data were reported with frequency and percentage.
Results: During establishment process, 386 documents including governmental regulations and contracts, memorandums from meetings, professional e-mails, newspaper articles, interviews, annual reports and program sheets of other poison centres and conference presentations were collected. Funding was provided form PHARE and BTox projects (2000-2003), and government of Estonia (2004-2012). Educational programs were held to train specialists in clinical toxicology and poisoning information to direct the PIC. The active phase of establishment started in 2004; however, the services of PIC became available at the beginning of 2008. In 2012, total number of calls was 1118. 20% of calls were related to general questions about pharmaceuticals and non-toxic agents. 894 calls were related to acute poisoning cases. Most of them (87.9%) were due to accidental poisoning. The most common types of substances responsible for poisoning were pharmaceutical products (30.2%), household products (29.5%) and plant toxins (11.1%).
Conclusion: To establish a stable PIC, it is crucial to have a wide range data backbone, clear support and direct funding from the government, assistance from collaborative PICs, active international/domestic collaboration and experienced committed specialists in clinical toxicology. A well-established PIC improves public health surveillance and reduces health-care costs. These effects should be investigated in future studies about the National PIC of Estonia.

Keywords: Poisoning; Poison information centre; Estonia

INTRODUCTION

Estonia is the smallest Baltic state with population of 1.34 million. Poisoning is a health concern in Estonia causing approximately 400 deaths each year (1). To assist physicians needing consultations on poisonings, Centre for Disaster Medicine (CDM) situated in the North-Estonian Medical Centre (NEMC) had been available 8 hours a day 5 days a week for many years (until the beginning of 21st century). However, establishment and development of a professional Poison Information Centre (PIC) with specialized staff and integrated setting became necessary due to on-going health system reforms (2). This could help to educate and consult the population (e.g. about poisonings and appropriate first aid), and to provide high-standard advice for health care professionals (e.g. about proper management of poisoned patients and information of antidotes) (3,4). Hence, establishment process of national PIC of Estonia initiated in 2000 when the Estonian Ministry of Social Affairs (MSA) applied for a European Union (EU) financing project, PHARE.

Institutions providing acute medical care in Estonia are mostly being privately operated (except pre-hospital ambulance services) with a state representative in the Council (2). Thus, the budgeting of PIC was under significant discussion. Moreover, clear vision and leadership at high governmental level must have been formed to support the centre.

In this study, different aspects of establishment process and obstacles of launching and promoting the national PIC in Estonia were described. Moreover, the annual profile of the calls in 2012 was analysed.

METHODS

The establishment of national Estonian PIC proceeded during a 12 year period (2000-2012). 2 health authorities (during 2000-2005), and 2 emergency medicine specialists (during 2006-2012) cooperated in this process. Their

[*]Correspondence to: Mare Oder, RN, MSc. Head of Estonian Poisoning Information Centre, Health Board, Poisoning Information Centre, Gonsiori 29, Tallinn 15027, Estonia.
Tel: +372 62 69 379, E-mail: mare.oder@16662.ee
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mission comprised of collecting data, collaborating with other regional PICs (Nordic PICs), cooperation with higher authorities in government, and participating in international conferences and working groups of poison centres. Hence, several scientific and administrative documents including bilateral emails, memorandums of meetings, conference presentations, etc. were collected. These documents were used as a data framework for achieving a well-structured modern PIC.

In 2012, the Estonian PIC started to operate 24 hours a day, 7 days a week. For better understanding of the picture of poisonings in Estonia, all inquiries related to toxic agent exposures in 2012 were retrospectively reviewed. Patient's demographic details, intention of poisoning and type of toxic substance were collected. The data were reported with frequency and percentage, and analysed using Microsoft Excel (Microsoft Corp., Redmond, WA, USA).

RESULTS

Establishment of national PIC of Estonia

Although the systematic establishing of Estonian PIC started in 2006, the process actually had begun in the 1990´s. During this period, some interested physicians and couple of officers from the Public Health Department of MSA cooperated. Establishment was not stated as a priority of State until 2004 when Estonia became a member of EU, and the European commission directives urged on founding a National PIC. Hence, the process activated within the MSA, under the supervision of Chemical Notification Centre (CNC). Furthermore, an international cooperation was initiated in the Nordic Association of Poisoning Centres (NAPC) meeting in 2000 in Tallinn, to share knowledge with the Estonian team. Finnish PIC became a crucial partner and remained a confident mentor in the further successful establishment of the PIC. Their offered expertise and guidance was of considerable value. Finnish PIC was chosen because of cultural and linguistic similarities between these two countries. The establishment process can be divided into 4 steps which are described as follow.

Providing data backbone

During 1990ś, all efforts were implemented toward obtaining knowledge about toxicology, poisonings, role of PICs and different aspects of establishing and administrating a PIC. In addition, treatment protocols and monographs, pharmaceutical information and most practical textbooks in identifying and management of drug overdoses and toxicological exposures such as POISINDEX® Micromedex international health care series were provided by the government or contributed by Swedish and Finnish PICs.

By 2005 principle knowledge to design a concrete plan to set up the operations was acquired in collaboration with the Finnish and other Nordic PICs. Two newly hired administrators of the PIC participated in a 4-week training program in the Finnish PIC. The team also started to participate in European Association of Poisons Centres and Clinical Toxicologists (EAPCCT) congresses to learn and to present scientific aspects of poisonings and directing PICs. This can be considered as a significant phase in the establishment process as it is the fastest way to learn basic skills and principles of working in a PIC.

In total, 393 administrative and scientific documents were collected, 386 of these were found relevant to the purpose of PIC establishment (Table 1). These documents included governmental regulations and contracts, memorandums from meetings, professional e-mails, newspaper articles, interviews, annual reports and work plans of other poison centres, and conference presentations. These documents were then categorized according to 5 main issues against establishment of PIC: (1) legislation, (2) location and structure, (3) budgeting, (4) knowledge, (5) leadership and launching (Figure 1).

Development of administrative framework and start-up package

To design the framework of the PIC, the EAPCCT "self-assessment checklist for minimum and optimum standard" was applied as a paradigm (5). In the initial phase, minimum standards were considered to be implemented. A five-year plan and budget was developed accordingly. In this regard, a phone line with a specific anonymous and toll free number (16662) were considered to be accessed for the PIC. An informative website for the centre was designed (www.16662.ee). The minimum number of employees required to administer the PIC for 24 hours a day, 7 days a week was estimated to be 10 (including

Table 1. Scientific and administrative documents used during the process

Type of document	2000-2005	2006-2012	Total
Legislations, contracts	6	8	14
Completed projects	14	10	24
Memorandum from meetings	6	17	23
Professional e-mails	28	117	145
Newspaper articles, interviews	3	112	115
Annual reports and work sheets of poison centres	9	15	24
Conference presentations	8	33	41
Total	74	312	386

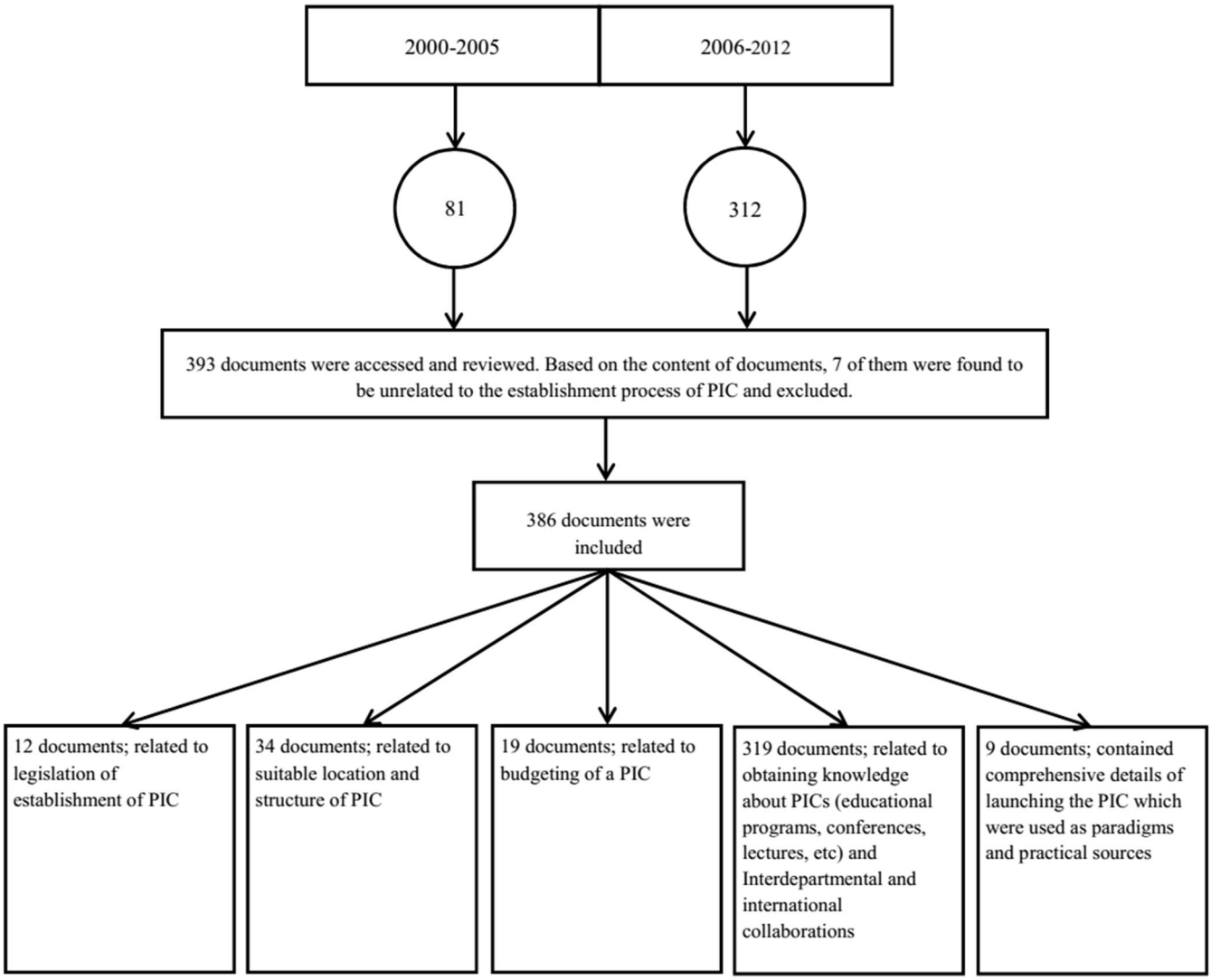

Figure 1. Scientific and administrative documents used in establishing process (2000-2012)

head of centre, clinical consultants and nurse consultants). However, due to limited budget, the PIC started with 4 specialists in 2008.

A comprehensive system for documentation of phone calls, based on the Finnish system, was developed. In this context, a well prepared checklist to record demographic information, substance category and clinical manifestations of all inquiries was developed and updated with local information in 2007. The inquiries were also proposed to be kept in computerised records. To keep recording protected, guidelines for database security was developed, prepared and approved according to the IT Baseline Protection Standard (by ISKE standards). During 2000 to 2003, funding was provided from PHARE (Integrated project with EU) and BTox project. The BTox project was carried out among the Swedish Chemicals Agency (KemI), Estonia, Latvia and Lithuania to improve education and training in toxicology in the Baltic countries. During 2004-2012 funding was only provided by the government of Estonia.

Institutionalization of leadership

To meet the minimum standards according to EAPCCT self-assessment checklist, educational programs were initiated to train specialists in clinical toxicology. In order to actively initiate the PIC, two emergency medicine specialists collaborated in 2006. The national PIC; however, launched officially in 2008. At the beginning, emergency medicine nurses with bachelor degree were employed as they were regarded to be the most suitable by education and work experience (6). Nevertheless, according to minimum standards, the executive team of centre must also have other specialties and expertise educated with university degrees.

At present, the national PIC of Estonia is directed by an emergency medicine nurse (MSc in nursing management). The rest of staff includes 6 emergency medicine nurses with bachelor degree and 2 clinical consultants (an anesthesiologist (MD) and an emergency medicine

physician (MD)). All staff members are qualified as specialists in issuing poisoning information.

Introducing, opening hotlines, and launching the PIC

At the beginning of 2008, during the economic crisis, it was decided to open phone line of the centre to prevent the loss of achievements which had been attained. Although it is necessary, no media campaign to introduce the centre to public and hospitals was conducted due to limited funding. The PIC's phone line opened for 8 hours per day, 5 days a week, in 2008. In 2009, the centre´s operating hours were prolonged to 24 hours from Monday morning till Friday evening. From 2012 the centre has provided services for 24 hours 7 days a week.

Furthermore, all staff started to actively participate in educational programs (lectures, articles, interviews, publications) for creating awareness in public and medical specialists about the PIC (7). Moreover, educational programs about poisonings were started for physicians and nurses.

By 2010, the National PIC of Estonia became well known enough as a source of toxicology expert advice for physicians, nurses, media, public and the state officials. Since then, specialists of PIC have also participated in many administrating and decision making programs including the national emergency updating plan, risk assessments for mass poisonings and the state antidote program (also publishing Handbook of Antidotes). Since 2006, some members of Estonian PIC have become full member of EAPCCT. Moreover, the national PIC of Estonia has become a full member of NAPC and has started to share experiences with other PICs.

One-year profile of national PIC of Estonia in 2012

Total number of calls in 2012 was 1118. 20% of calls were related to general questions about pharmaceuticals and non-toxic agents. 23% of calls were made by medical professionals (physicians, nurses), 76% by public and 1% by some specific state agency officials and media.

894 calls were related to acute poisoning cases. Most of them (87.9%) were due to accidental poisoning. 53.1% of poisoning calls were attributed to children in preschool ages (Table 2). The most frequent types of substances responsible for poisoning were pharmaceutical products (270; 30.2%), household products (264; 29.5%) and plant toxins (99; 11.1%) (Figure 2).

Table 2. Profile of calls to Estonian Poisoning information centre in 2012

Gender (Male/Female)	495/584*
Age, No. (%)	
<1 year	54 (6.1)
1-6 years	420 (47.0)
7-18 years	42 (4.7)
19-35 years	137 (15.3)
36-65 years	121 (13.5)
>66 years	44 (4.9)
Not recorded	76 (8.5)
Intention of poisoning, No. (%)	
Intentional	115 (12.9)
Accidental	779 (87.1)

* In 37 cases more than one person were involved

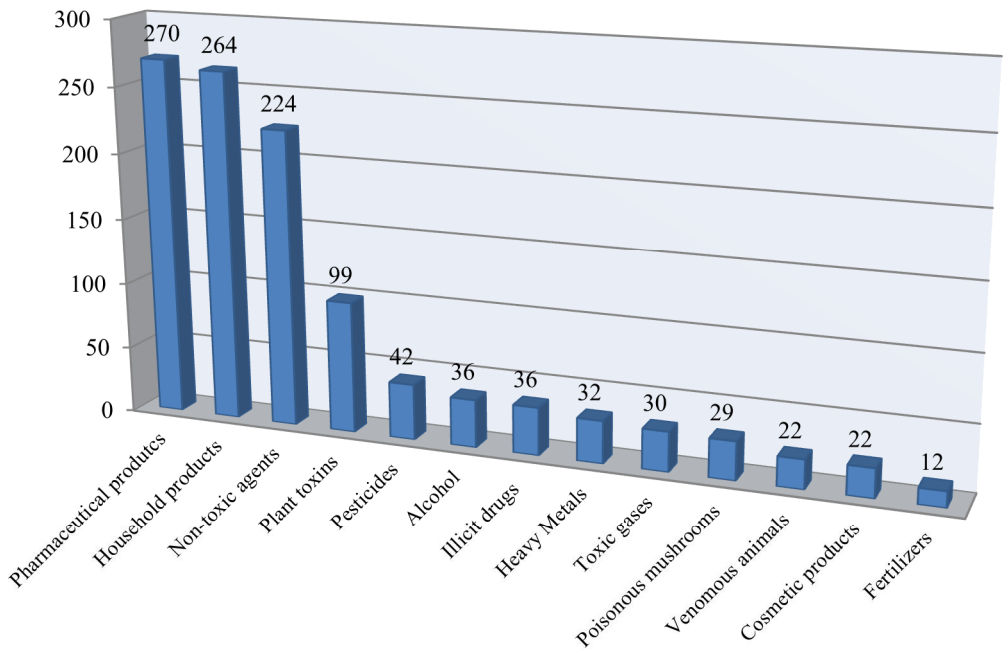

Figure 2. Annual profile of the calls to the Estonian Poisoning Information Centre in 2012

DISCUSSION

Establishment of a poison information centre is one of the priorities in a health care system as World Health Organization and European Commission recommended (3). The establishment of a PIC is a sophisticated scientific process which requires cooperation of governmental institutions, universities and media. Establishment of national PIC of Estonia took approximately 10 years of research, providing logistical data support and training. However, to start a well-developed centre, 6 years more of learning, consulting and absorption of governmental funds were necessary.

During this process, it was revealed that a PIC can be successfully established when updated reliable information sources are easily accessible, well-educated trained staff is engaged, a clear vision is defined, active PICs of other countries assist, governmental supports are received and minimum standards according to guidelines are met (5). The main obstacle during this process was funding. This could not be achieved unless the need for establishing a PIC was clarified to the government and subsequently the government actively supported the process. Nevertheless, the most valuable contributions in starting the services were provided by the specialists of Finnish PIC with their important practical advice and the management monographs dedicated by them.

One of scientific outcomes of PICs is annual report of poisoning. This information helps health authorities to identify the most common types of poisons used and ages at risks in a specific region. In this study, we described the 2012 annual report of poisoning calls to our centre. We found that pharmaceutical products, household products and plant toxins were the most common causes of poisoning in Estonia. Likewise, reports from several PICs in different parts of the world showed that pharmaceutical and household products were the major causes of poisoning (8-10). Nevertheless, animal envenomations were more reported from tropical and subtropical countries (8,10-13). In this regard, Estonia is known to have a temperate to cold climate and thus venomous bites and stings are among the least common causes of poisoning (Figure 2). Moreover, pesticides which are one of the most common toxic agents responsible for poisoning in China and Southeast Asia (8,9,11,14), were less involved in poisonings in Estonia (Figure 2), possibly due to strict terms of sale in EU countries.

Most poisoning calls to our centre were related to preschool ages. This finding interestingly resembles reports from PICs of Thailand and India (8,11). This could be due to exploratory behaviours of children in these ages which drive them to taste everything with their mouth (15). Hence, care-givers and parents should be educated about the high threat of poisoning in these ages.

LIMITATIONS

Data of poisoning calls to the centre in 2012 were retrospectively reviewed and so not all demographic features of patients were available. In addition, data regarding outcome of patients (hospitalization, recovery, death) in the period of this study were not available.

CONCLUSION

To establish a stable PIC, it is crucial to have a wide range data backbone, clear support and direct funding from the government, assistance from collaborative PICs, active international/domestic collaboration and experienced committed specialists in clinical toxicology. It is known that a well-established PIC improves public health surveillance and causes reductions in health-care costs (16). These effects should be investigated in future studies about the Estonian PIC.

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