Overview of Poisoning Incidence and the Pharmacists Role in Prevention & Management of Poisoning

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Universiti Sains Malaysia

1st. National Poisoning Symposium 2016:
Pharmacist’s Role in Poisoning Prevention and Management
5th-6th March 2016
St. Giles Wembley Hotel, Penang
To function as the main resource centre in providing information on toxicity and risk of poisons.

To assist in the management of poisoning cases.

To systematically disseminate drug and poison information and advice through the use of efficient, reliable and cost-effective methods.
24 hrs Service

Including Weekends & Public Holidays

After Office Hours 012 - 4309499

1 800 88 8099
Number of poisoning cases referred for enquiries

Year | Number of cases
--- | ---
1995 | 94
1996 | 119
1997 | 133
1998 | 231
1999 | 231
2000 | 288
2001 | 278
2002 | 291
2003 | 387
2004 | 859
2005 | 1280
2006 | 1501
2007 | 1925
2008 | 2595
2009 | 3392
2010 | 5022
2011 | 6172
2012 | 3556
2013 | 4533
2014 | 4996
Poisoning cases statistic

- There were more than 35,000 poisoning cases enquiries that has been reported to the poison centre since its establishment from the year 1995. These poisoning cases involve:

  - Pharmaceuticals,
  - Drugs of abuse,
  - Pesticides,
  - Industrial chemicals,
  - Household products eg; cleaning agents
  - personal care products
  - Natural toxins eg; mushrooms , marine toxins
Distribution of poisoning cases by **TYPES of agent** (2006-2014)

- **Pesticides** (9609, 29%)
- **Household product** (8463, 25%)
- **Pharmaceutical products** (12084, 36%)

- Unknown function: 2%
- Agricultural/Garden product: 1%
- Environment contaminant: 1%
- Food & Beverages: 0%
- Household product: 2%
- Industrial/Commercial product: 1%
- Mixtures of agents: 0%
- Natural toxin: 0%
- Pharmaceutical product: 0%
- Pesticide: 2%
- Substance of abuse: 1%
- Others: 3%
PHARMACEUTICAL products poisoning (2006-2014)

<table>
<thead>
<tr>
<th>Type of pharmaceutical products</th>
<th>Number of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unknown medicine</td>
<td>50, 581</td>
</tr>
<tr>
<td>Antidiabetic</td>
<td>253, 1038</td>
</tr>
<tr>
<td>Vitamin/Mineral</td>
<td>277</td>
</tr>
<tr>
<td>Topical agent</td>
<td>21, 386</td>
</tr>
<tr>
<td>Psychiatric drug</td>
<td>299, 2189</td>
</tr>
<tr>
<td>Herbal remedies</td>
<td>280</td>
</tr>
<tr>
<td>Gastrointestinal drug</td>
<td>27, 306</td>
</tr>
<tr>
<td>Cough &amp; cold</td>
<td>14, 953</td>
</tr>
<tr>
<td>Antiinfective</td>
<td>307</td>
</tr>
<tr>
<td>Analgesic</td>
<td>373, 1685</td>
</tr>
</tbody>
</table>
PESTICIDE poisoning
(2006-2014)

Type of pesticides

Nuber of cases

Insecticide  Herbicide  Rodenticide  Fungicide  Household Insecticide  Other pesticide  Unknown pesticide  Mixed pesticides
HOUSEHOLD PRODUCTS poisoning (2006-2014)

- Unknown household product: 5 cases
- Other household product: 37 cases
- Mixed household products: 611 cases
- Stationery/Art & Craft: 211 cases
- Solvents: 1218 cases
- Electric/Electronic component: 49 cases
- Cosmetic/Personal care: 1013 cases
- Cleaner/Bleach/Disinfectant: 4558 cases
- Automotive: 761 cases

Number of cases
NATURAL TOXIN poisoning (2006-2014)

Type of natural toxins

- Snake: 418 cases
- Spider/Scorpion/Centipede: 119 cases
- Insect: 36 cases
- Jellyfish: 30 cases
- Other marine toxin: 54 cases
- Bacteria/Fungi/Algae: 157 cases
- Other natural toxin: 23 cases
- Unknown natural toxin: 4 cases

Number of cases
### Intentional Incidents

**Type of poisoning incidents (2006-2014)**

<table>
<thead>
<tr>
<th>Intentional</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suicidal (Bunuh diri)</td>
<td>15200</td>
<td>45.1</td>
<td>83.9</td>
</tr>
<tr>
<td>Abortion (Pengguguran)</td>
<td>18</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Abuse (Penyalahgunaan)</td>
<td>722</td>
<td>2.1</td>
<td>4.0</td>
</tr>
<tr>
<td>Others (Lain-lain)</td>
<td>263</td>
<td>0.8</td>
<td>1.5</td>
</tr>
<tr>
<td>Unknown (Tidak diketahui)</td>
<td>1233</td>
<td>3.7</td>
<td>6.8</td>
</tr>
<tr>
<td>Misuse (Tidak patuh cara guna)</td>
<td>680</td>
<td>2.0</td>
<td>3.8</td>
</tr>
<tr>
<td><strong>Total (Jumlah)</strong></td>
<td><strong>18116</strong></td>
<td><strong>53.8</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

### Unintentional Incidents

<table>
<thead>
<tr>
<th>Unintentional Incidents (Insiden tidak sengaja)</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accidental (Kemalangan)</td>
<td>13426</td>
<td>39.9</td>
<td>90.9</td>
</tr>
<tr>
<td>Environmental (Alam sekitar)</td>
<td>35</td>
<td>0.1</td>
<td>0.2</td>
</tr>
<tr>
<td>Others (Lain-lain)</td>
<td>132</td>
<td>0.4</td>
<td>0.9</td>
</tr>
<tr>
<td>Therapeutic Error (Ralat terapeutik)</td>
<td>516</td>
<td>1.5</td>
<td>3.5</td>
</tr>
<tr>
<td>Unknown (Tidak diketahui)</td>
<td>152</td>
<td>0.5</td>
<td>1.0</td>
</tr>
<tr>
<td>Inapporprate Use (Tersalah cara guna)</td>
<td>173</td>
<td>0.5</td>
<td>1.2</td>
</tr>
<tr>
<td>Occupational (Pekerjaan)</td>
<td>331</td>
<td>1.0</td>
<td>2.2</td>
</tr>
<tr>
<td>Transport accident (Kemalangan kenderaan)</td>
<td>1</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Total (Jumlah)</strong></td>
<td><strong>14766</strong></td>
<td><strong>56.1</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>
Poisoning in children

• More than half of poisonings occur in young children, with those 1–3 years of age presenting the highest risk.

• Serious poisoning is more likely when a child ingests an adult-strength, high-potency, sustained-release product.

• Oral hypoglycemic agents, analgesics, sedative-hypnotics, and cardiovascular drugs account for the highest rate of hospitalization and injury rates in young children.
Children poisoning by type of agent (2006-2014)

- Others: 46
- Unknown Function: 13
- Substance of abuse: 24
- Pesticide: 884
- Pharmaceutical: 2355
- Natural Toxins: 53
- Mixture of agents: 4
- Industrial/Commer: 64
- Household/Leisure: 2452
- Food and Beverages: 11
- Environmental: 1
- Agricultural/Garden: 37

- 5-14 yrs
- 1-4 yrs
- 4 weeks - 12 months
- 0-4 weeks
Poisonings in Adolescents

• Though they are less frequent compared to young children, but they are often more serious.

• More than half are intentional (i.e. suicide or recreational drug abuse)

• Example of some commonly abused medications include dimenhydrinate, dextromethorphan benzodiazepines.
Poisonings in Adults

- In adults, intentional poisonings are more common than unintentional poisonings;

- Unintentional poisonings can result from therapeutic errors or drug interactions, or from taking more than one product containing the same ingredient or with similar effects.

- Common therapeutic errors in adults include repeat doses, taking the wrong medication, taking doses too close together, and incorrect dosing route.
Teenagers and adult poisoning by type of agent (2006-2014)

- **Others**: 86
- **Unknown Function**: 70
- **Substance of abuse**: 555
- **Pesticide**: 7005
- **Pharmaceutical**: 6792
- **Natural Toxins**: 601
- **Mixture of agents**: 254
- **Industrial/Commercial**: 642
- **Household/Leisure**: 4022
- **Food and Beverages**: 54
- **Environmental contaminant**: 8
- **Agricultural/Garden**: 247
Role of pharmacist in poisoning prevention & management

Unintentional poisoning

• Pharmacists can promote poison prevention by encouraging all consumers to use child resistant packaging and to keep all medications out of reach of children.

• Information can be targeted to those picking up prescriptions for opioids, cardiovascular medications, and sedative-hypnotic agents
Role of pharmacist in poisoning prevention & management

Unintentional poisoning (cont)

• Parents, grandparents, and caregivers should keep the phone number of the local poison control centre with other emergency numbers, and know basic first aid in case a poisoning occurs.

• Pharmacists can increase awareness by distributing poison prevention pamphlets and poison control centre phone numbers.
Intentional poisoning

- Intentional poisoning occurs when someone abuses medication for recreational purposes. Patterns of drug abuse differ by region, vary with time, and are often inventive.

- Community pharmacists must be knowledgeable about local drug abuse trends to address adverse effects, potential interactions, drug diversion issues, and overdose management. Poison control centres, drug information centres, local law enforcement agencies, and internet sites can provide insight into local drug abuse patterns.

- Awareness of local drug abuse practices can also help pharmacists enhance patient care by identifying patients at risk for drug overdose and misuse.
Intentional poisoning (cont)

• Anyone who expresses the hint of suicide should be taken seriously. Poison prevention in this patient population will involve working with other healthcare professionals, agencies, and family members.

• The pharmacist can limit the number of pills provided at one time to a suicidal or depressed patient and monitor the intervals between refills to ensure appropriate use and prevent drug hoarding.

• Pharmacists must protect the patient’s right to confidentiality, but this may be breached when failure to disclose information could place the patient in serious danger.
The NPC has produced various health-related educational materials since its inception.
Interactive Multimedia Content

Preventing Health Risks From The Use of pesticides in Agriculture

General Facts About Pesticides

Hazardous Chemicals in Human and Environmental Health

Management of Poisoning

Healthy Environments for Children
Integrate two important disciplines: health (science)…. and literacy (arts)…. to form Health Literacy….. one of the pillar of health promotion.
Our Products

  World Health Organization - Western Pacific Region

  World Health Organization - Western Pacific Region

2001 2002 2003 2004

- Development of Multimedia packages for education and prevention
  National Poison Centre and WHO (2000 - Kini)

- Development of the Multilevel Course on the Sound Use of Pesticides and Diagnosis and Treatment of Pesticide Poisoning
Enhancing the Pharmacist’s Role in Optimizing Drug Therapy and Patient Outcome. A CD-ROM training toolkit for pharmacists

WHO Collaborating Center for Drug Information for the WPR* and University of Philippines, Philippine General Hospital, Department of Pharmacy. (2004) * Western Pacific Region

Production of 7 series of Tobacco-Control Vignettes.

Transdisciplinary Tobacco Use Research Center, Roswell Park Cancer Institute, USA (TTURC) (2007)

Hazardous Chemicals in Human and Environmental Health, an interactive digital textbook. Developed by National Poison Center, USM

World Health Organization (WHO) (2007)

Herbal Hub Information System Malaysian Ministry of Health

2006

Sound Management of Pesticides and Diagnosis and Management of Pesticide Poisoning A multimedia CD-ROM multilevel training materials

WHO (Geneva) (2006)

2007

Toxicology in the Classroom. An interactive multimedia CD-ROM training toolkit for children

United Nation Environmental Programme (UNEP), International Union for Pure and Applied Chemistry (IUPAC), World Health Organization (WHO)

Quit smoking services A multimedia interactive guide to smoking cessation

Malaysia Quit-line Services

Genetically Engineered Rice- What every consumer should know. An Animated Video Multimedia CD-ROM

Pusat Racun Negara and the Pesticide Action Network (PANIN)
Examples of Products Developed

Capacity Building in Tobacco Control for NGOs aims to:

- Promote awareness among NGOs on the issues pertaining to tobacco control and specifically to the area of smoke-free initiatives.
- Build skills in research methodology and grant application for implementing activities and research.
- Establish a cooperative and collaborative working relationship between NGOs, health promotion agencies, and researchers.

USMPromotingHealth
ICT Multimedia Initiatives

GENETICALLY ENGINEERED RICE
What every consumer should know

LIVING WITH THE ENEM*
MAKI MENDKHALI; DAWAN (DARAGA) DAURAN

KIDDIE GARDEN

CREATING HEALTH
TEACHING KINDergarten KIDS THE DANGERS OF SMOKING

MANUAL FOR INDOOR RESIDUAL SPRAYING
APPLICATION OF RESIDUAL SPRAYS FOR VECTOR CONTROL

The WHO Framework Convention on Tobacco Control, a multinational treaty with more than 174 Parties, was the first treaty of its kind to be adopted by the United Nations. The Framework Convention on Tobacco Control (FCTC) was adopted on May 21, 2003, and entered into force for countries that had ratified it on February 27, 2005. The Framework Convention on Tobacco Control recognizes the importance of tobacco control and the need for effective action to prevent tobacco use. The Convention promotes the implementation of comprehensive tobacco control measures, including legislation, regulation, and public health initiatives. The Convention also aims to ensure that countries work together to address the global problem of tobacco use.

Indoor residual spraying is widely used for control of malaria and other vector-borne diseases. However, indoor residual spraying is used in a controlled manner that is consistent with the principles of indoor residual spraying. With a good knowledge of the principles of indoor residual spraying, the health worker can ensure that the spraying is carried out in a way that is effective and safe for the community. This manual is intended to serve as a guide for health workers involved in vector control programs.
2012

Informatics for Community Health: Utilizing New Media to Enhance Training and Learning
- e-books and digital magazines for iPad, Android and mobile applications

Our products:

- Toxicology in the Classroom - Children’s Edition for Self-Learning
- Toxicology in the Classroom - Guide on Teaching Activities for Teachers

International Tobacco Control Policy Evaluation 2012 Malaysia Report

Sound management of Pesticides and Diagnosis and Management of Pesticides Poisoning

UNEP, WHO

Waterloo University

WHO - Geneva
TOXICOLOGY IN THE CLASSROOM - TEST RUN IN MALAYSIA, ARGENTINA & GHANA

LEARNING TOXICOLOGY IN MALAYSIA

VIPP IN LEARNING TOXICOLOGY

TEACHING IN GHANA

LEARNING TOXICOLOGY IN GHANA

TEACHING IN GHANA

LEARNING TOXICOLOGY IN ARGENTINA

TEACHING IN ARGENTINA

DISCUSSIONS WITH TEACHERS

LEARNING TOXICOLOGY IN ARGENTINA
LEARNING TOXICOLOGY IN MALAYSIA

CROSS WORD PUZZLE

SELF- LEARNING

GROUP WORK MATCHING

VISUALIZING CONCEPT

SPIDER MAP GAME

CAT-WALK PROTECTING ATTIRE

COMPUTER COURSEWARE

LECTURE

READING INFORMATION FROM PRODUCT CONTAINERS
International Children Book Fair, Shanghai, China 1-3 Nov 2013
Thank You