

## Keeping Children Safe from Unintentional Poisoning in the Home

### Key Facts

- ※ In Hong Kong, unintentional childhood poisoning is not uncommon. Between 2011 and 2013, data from 16 Accident and Emergency Departments under the Hospital Authority showed that there were 793 unintentional poisoning cases among children aged 14 and below, in which 559 (70.5%) cases happened in the home.
- ※ Among the unintentional childhood poisoning incidents in the home, more cases happened in boys (54.2%) and the majority involved children aged 4 or below (88.0%). The most common poisoning agents involved were medications (63.5%), household products (15.4%) and pesticides (6.2%).

### Tips for Preventing Unintentional Childhood Poisoning in the Home

- ※ While parents and carers should take time to teach children about poisoning and tell them not to put things into their mouth casually, the best way to keep children safe from poisoning is to ensure that they cannot get to them.
  - ☑ Check every corner in the home for poisoning agents (such as medications, cleansing products and chemicals, cosmetics and personal care products, poisonous plants, cockroach baits and rat baits). Put all poisoning agents out of reach of children.
  - ☑ Keep poisoning agents in their original child-proof and clearly labelled bottles or containers. Use child-resistant locks on cupboards containing cleansing fluids and other household chemicals. Dispose out-of-date or unwanted medications, chemicals and batteries properly.
  - ☑ Keep children away from treated areas where pesticides are applied. Keep a close eye on young children in and around the home.
  - ☑ Read the labels carefully and follow the instructions strictly when giving medications to children. Do not stock medications that are not needed.
- ※ Recognise the signs and symptoms of poisoning, such as hacking cough or trouble breathing; nausea and/or vomiting; abdominal pain; swollen or red eyes; rash, red or burned lips, mouth or skin; seizures; drowsiness or unconsciousness (in extreme cases).
- ※ Act fast in case of suspected poisoning: keep calm; seek medical attention promptly; call 999 emergency hotline immediately if the condition is serious.

## Keeping Children Safe from Unintentional Poisoning in the Home

Many people think that the home is a place where children will be safe from all harms. However, the home and its surroundings can sometimes be dangerous for children. Studies have shown that most childhood injuries occur in the home itself, including unintentional poisoning.

By definition, ‘poisoning’ refers to an injury that results from being exposed to an exogenous substance that causes injury or death.<sup>1</sup> In fact, poisons can be found in everyday items that are located in the home – kitchen, bathroom, laundry room, living room, bedroom, garage, closets and storage area. They can be ingested, inhaled or absorbed when in contact with skin or mucous membranes. Common poisoning agents found in the home include medications (such as over-the-counter or prescription medications and herbal products), alcohol, household cleansing products (such as bleaches, disinfectants and detergents), cosmetics and personal care products (such as perfumes, mouth washes and hair dyes), organic fuels and solvents (such as hydrocarbon fuels, paint remover and glue), pesticides (including insecticides and rodenticides), poisonous houseplants (such as peace lily and oleander), and insect bites or stings (such as red fire ants, spiders, bees or wasps).<sup>1</sup> While most unintentional childhood poisoning incidents in the home happen suddenly, some develop progressively

over time due to repeated or chronic exposure to small amount of the toxic substances (such as lead which is a heavy metal and they can be present in contaminated dusts, lead-based paint and toys).

### Global Epidemiology of Unintentional Poisoning in Children

#### *Mortality and Morbidity*

Although significant progress in public health policy has been made towards the protection of young children from the harms presented by exploratory ingestion of medications in the past decades (such as the advent and requirement of child-resistant packaging on most medications and poisonous substances), poisoning remains as an important cause of mortality and morbidity among children globally.<sup>2,3</sup> As the Global Burden of Diseases, Injuries, and Risk Factors Study 2010 (GBD 2010) reported, the global burden of disease attributed to poisoning in children aged 1-14 had reduced substantially between 1990 and 2010. Nevertheless, poisoning still accounted for over 17 000 deaths and around 1.5 million of disability-adjusted life year (DALY) lost (i.e., the number of years lost due to ill-health, disability and early death) among children aged 1-14 worldwide in 2010 (Table 1).<sup>4</sup>

**Table 1: Estimated number of deaths and disability-adjusted life year (DALY) lost due to poisoning worldwide among children aged 1-4, 5-9 and 10-14, 1990 and 2010**

Age (year)	Estimated number of deaths			Estimated number of DALYs		
	Year 1990	Year 2010	% change	Year 1990	Year 2010	% change
Age 1-4	26 228.8	11 541.1	↓ 54%	2 203 539.8	969 042.5	↓ 54%
Age 5-9	6 364.7	3 095.4	↓ 50%	508 425.4	248 799.6	↓ 50%
Age 10-14	5 368.9	3 254.7	↓ 38%	401 713.1	245 063.6	↓ 37%

Source: Institute for Health Metrics and Evaluation, University of Washington.

### *Risk Factors*

Childhood poisoning does not 'just happen', but very often involves a complex interplay of factors related to the child, poisonous substance, environment and family behaviour.

Age has a strong association with childhood poisoning as it determines the behaviour, size and physiology of the child, thus influencing types of exposure and outcome. As most substances increase in toxicity as the dose increases relative to body mass, children under the age of 1 year have the highest rate of fatal poisoning because of their smaller size and less well-developed physiology. Non-fatal poisoning appears to be more common among children aged 1 to 4, with poisoning rates increasing dramatically at around 2 years of age.<sup>1</sup> Curiosity, tendency to place objects into the mouth and imitate adults in medication-taking, developmental ability of becoming more mobile, lack of judgment and limited knowledge at this certain age make them more likely to be victims of unintentional poisoning. In addition, boys appear to be at consistently higher risk of unintentional poisoning. Such difference may be explained by the fact that in some cultures, girls are expected not to engage in outdoor activities or adopt risk-taking behaviour.<sup>1</sup> For young children, they are particularly susceptible to the accidental ingestion of poison<sup>5</sup>, especially liquid agents as they are easier to swallow than solid compounds. Besides, clear liquids, small solids, bright coloured solid medications are more appealing to young children and thus more likely to be ingested.<sup>1</sup>

Depending on socioeconomic status, cultural practices, local industries and agricultural activities, the prevalence and types of poisoning vary considerably globally. In developed countries as well as some developing countries, the most

common agents involved in unintentional childhood poisoning are medications and household products. In many low- and middle-income countries, ingestion of hydrocarbon fuels (such as paraffin oil or kerosene that are used for cooking, heating or lighting) is a common cause. Children living in agricultural communities are at higher risk of acute pesticide poisoning.<sup>1</sup> It is noteworthy that unintentional poisoning in young children increasingly involves medications.<sup>3</sup> In the United States, the number of children younger than 6 years who were seen in poison centres after an accidental exposure to medications had been increased by 33% between 2000 and 2010; medication deaths as a percentage of all child poisoning deaths had also nearly doubled since the late 1970s.<sup>6, 7</sup> Reasons for such increases include more medications than ever are kept in the home (including prescription and over-the-counter medications, dietary supplements, vitamins and herbals). The pace of today's lifestyle also means that medications may not be properly stored immediately after every use, especially when medication users find it inconvenient to store medication in locked cabinets when they are used once or several times a day. While young children may now have greater access to grandparents' medications because of living in multi-generational households or when busy parents rely on grandparents in caring of children, lack of knowledge among parents and carers to take poisoning preventive measures, along with neglect or insufficient supervision to children's curious impulsive behaviour increase the risk of childhood poisoning. Besides, children's medications that are formulated to taste good may also entice children to take them when unsupervised.<sup>2, 3, 7</sup>

## Unintentional Childhood Poisoning among Local Children

In Hong Kong, unintentional childhood poisoning is not uncommon. Between 2011 and 2013, data from 16 Accident and Emergency Departments under the Hospital Authority showed that there were 793 unintentional poisoning cases among children aged 14 and below, in which 559 (70.5%) cases happened in the home. As shown in Table 2, among the unintentional childhood poisoning incidents in the home, more cases happened in boys (54.2%) and

majority involved children aged 4 and below (88.0%). By exposure to the main types of poisoning agents, most incidents in the home involved western medications (63.5%), followed by household products (15.4%) and pesticides (6.2%) (Table 3).<sup>8</sup> Regarding mortality, there were four registered deaths due to accidental poisoning in the home among children aged 14 and below between 2008 and 2012.<sup>9</sup>

**Table 2: Number of unintentional poisoning incidents in the home among local children aged 14 and below by sex, age and year of occurrence, 2011-2013**

	Year 2011	Year 2012	Year 2013	Total
<b>Sex</b>				
Male	96	95	112	303
Female	88	85	83	256
<b>Age (year)</b>				
0-4	163	154	175	492
5-9	14	19	17	50
10-14	7	7	3	17
<b>Total</b>	<b>184</b>	<b>180</b>	<b>195</b>	<b>559</b>

Sources: Hong Kong Poison Information Centre and Department of Health.

## Prevention of Unintentional Childhood Poisoning in the Home

Unintentional poisoning is avoidable and preventable. Every effort should be made to prevent the occurrence or to reduce the morbidity and mortality of unintentional childhood poisoning.<sup>10</sup> However, a survey conducted by the Department of Health in 2008 showed that many households were not vigilant enough in preventing domestic poisoning. While 73.5% of households adopted the preventive measures of not putting different medications into the same container all the time, 26.9% of households did not label medications or poisoning agents (such as household sanitary agents) clearly at all (none of the time). Among the house-

holds with children aged below 11, about three-fifths (59.3%) of them reported that they failed to use child-proof containers for storing medicines all of the time and over one-quarter (28.6%) failed to keep medications and poisoning agents out of reach of children all of the time.<sup>11</sup> In fact, many childhood poisoning incidents can be prevented if parents and carers implement appropriate preventive measures in the home. Parents and carers should also be vigilant of the signs and symptoms of poisoning, and act fast in case of suspected poisoning.

**Table 3: Number of unintentional poisoning in the home among local children aged 14 and below by main types of poisoning agents , 2011-2013**

Poisoning Agent	Number of cases*
<b>Western Medications</b>	<b>408 (63.5%)</b>
<i>Analgesics</i>	60
<i>Antihistamines</i>	60
<i>Cardiovascular drugs</i>	42
<i>Cold and cough preparations</i>	42
<i>Vitamins</i>	29
<i>Respiratory drugs</i>	27
<i>Sedatives and hypnotics</i>	23
<i>Anti-microbial</i>	20
<i>Gastro-intestinal drugs</i>	20
<i>Others</i>	85
<b>Household products</b>	<b>99 (15.4%)</b>
<i>Desiccants, dehumidifier and oxygen absorbent</i>	26
<i>Cleaners</i>	17
<i>Moth and mosquito repellent</i>	15
<i>Bleaches</i>	8
<i>Battery, toys and foreign bodies</i>	8
<i>Others</i>	25
<b>Pesticides</b>	<b>40 (6.2%)</b>
<i>Insecticides</i>	34
<i>Rodenticides</i>	2
<i>Others</i>	4
<b>Cosmetics and personal care products</b>	<b>27 (4.2%)</b>
<i>Cream, lotion and make-up</i>	13
<i>Hair care products</i>	4
<i>Dental care products</i>	2
<i>Nail products</i>	2
<i>Others</i>	6
<b>Miscellaneous</b>	<b>69 (10.7%)</b>
<i>Metals</i>	17
<i>Chinese and alternative medicines</i>	11
<i>Alcohol</i>	10
<i>Bites and envenomations</i>	7
<i>Fumes, gases and vapours</i>	4
<i>Industrial products</i>	2
<i>Others</i>	18
<b>Overall</b>	<b>643 (100.0%)</b>

Note: \* Some cases had exposed to more than one main type of poisoning agents.

Sources: Hong Kong Poison Information Centre and Department of Health.

### *Implementing preventive measures in the home*

While parents and carers should take time to teach children about poisoning and tell them not to put things into their mouth casually, young children may not understand or remember what is dangerous. Therefore, the best way to keep children safe from poisoning is to ensure that they cannot get to them. Here are some dos and don'ts that can help reduce the risk of childhood poisoning in the home: <sup>12-15</sup>

- ✔ Check every corner in the home for poisoning agents (medications, cleansing products and chemicals, cosmetics and personal care products, poisonous plants, cockroach baits and rat baits). Put all poisoning agents out of reach of children immediately after buying or using them. Be aware of any medications or cosmetics that are in the handbag, and store the handbag out of reach of young children too.
- ✔ Keep poisoning agents in their original child-proof and clearly labelled bottles or containers. Use child-resistant locks on cupboards containing cleansing fluids and other household chemicals. Dispose out-of-date or unwanted medications, chemicals and batteries properly.
- ✔ Keep children away from treated areas where pesticides are applied. Closely supervise young children in and around the home. Handle the poisoning household products carefully when using them since children may ingest them when adults are focusing on their work.
- ✔ Read the labels carefully and follow the instructions strictly when giving medications to children. Be careful with overdose due to multiple medications which may contain the same ingredients (e.g. giving syrup and rectal paracetamol at the same time). Use the dosing device that comes with the medications (note: kitchen spoons are not all the same, and tea-spoon and tablespoon used for cooking may not measure the same amount as the dosing device).

Give medications in a well-lit place to avoid dosing errors. Tell children that medications and household products are not candies or food. Do not stock medications that are not needed.

- ✘ Do not put poisonous products in food containers or drink bottles which children may mistake for food or drink. Do not store medications in the fridge or cupboards where children expect to find food or drink. Do not remove the labels on the medications or household products.
- ✘ Do not give extra amount of medications to children even if they have missed the previous dose, or give other people's medications or those left from a previous consultation to children.
- ✘ Do not apply pesticides directly to household utensils or surface used for food preparation.

### *Recognising the signs and symptoms of poisoning in children*

Most poisons (with the exception of heavy metals such as lead) work fairly quickly. Parents and carers should be vigilant to the possibility of poisoning if they find an opened or spilled bottle of pills, or if they see suspicious stains on children's mouth or clothing, or the otherwise well children develop unusual signs and symptoms. Possible warning signs and symptoms associated with poisoning include <sup>12, 13</sup>:

- \* Hacking cough or trouble breathing
- \* Nausea and/or vomiting
- \* Abdominal pain
- \* Swollen or red eyes
- \* Rash, red or burned lips, mouth or skin
- \* Seizures
- \* Drowsiness or unconsciousness (in extreme cases)

### *Acting fast in case of suspected poisoning*<sup>15</sup>

Deaths and disabling sequelae in children following poisoning can be prevented or minimised by acting fast. When a child is suspected of poisoning, parents and carers should:

- Keep calm;
- Seek medical attention promptly;
- Call 999 emergency hotline immediately if the condition is serious.

For more educational resources about poisoning, please visit the website of the Hong Kong Poison Control Network at <http://www.hkpcn.org.hk/eng/Index2.html>.

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## Protecting Children and Adolescents from Alcohol-related Harm

Many FIRST things in life come from parents. Do parents give the BEST to the children they love?

At 6 months  
My parents gave me the first



which became my  
childhood companion

HP  
衛生防護中心  
Department of Health  
www.change4health.gov.hk

At 2 years  
My parents gave me the first



which brought my  
imagination into full play

HP  
衛生防護中心  
Department of Health  
www.change4health.gov.hk

At 6 years  
My parents gave me the first



which developed my  
habit of saving

HP  
衛生防護中心  
Department of Health  
www.change4health.gov.hk

At 15 years  
My parents gave me the first



that made me more  
prone to cancer

The International Agency for Research on Cancer of the World Health Organization  
confirms alcohol can cause cancer

HP  
衛生防護中心  
Centre for Health Protection  
衛生署  
Department of Health  
www.change4health.gov.hk

As parents and guardians, they should know that alcohol is a component cause in more than 200 diseases and injury conditions, including certain cancers, cardiovascular diseases, liver cirrhosis, falls and drowning. Children and adolescents are at particular risk of immediate, short- and long-term alcohol-related harm, which affects their physical, intellectual, social and mental development. Early initiation of drinking is also shown to be a powerful predictor of alcohol dependence and abuse in later age. Thus, there is no place for alcohol in a child or adolescent's life. To protect children and adolescents from alcohol-related harm, parents and guardians should be role models by not drinking and not exposing children and adolescents to alcohol. Remember the **3 Don'ts**:

- \* **Don't let children and adolescents drink**
- \* **Don't give children and adolescents alcohol**
- \* **Don't pressure children and adolescents to drink**

The public may visit the Centre for Health Protection's webpage on 'Alcohol and Health' ([www.chp.gov.hk/en/view\\_content/34286.html](http://www.chp.gov.hk/en/view_content/34286.html)) for more information.

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