

# **Hong Kong Reference Framework for Preventive Care for Children in Primary Care Settings**

## **Module on Childhood Injury Prevention**

**2018**



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## CONTENT

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Chapter 1. Epidemiology of Childhood Injuries.....	4
Chapter 2. Factors for Childhood Injuries .....	6
Chapter 3. Injury Prevention.....	10
Chapter 4. Non Accidental Injury (NAI).....	21
Chapter 5. Conclusion .....	25

## Chapter 1. Epidemiology of Childhood Injuries

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Injury is an important public health issue all over the world. Apart from resulting in significant number of deaths and disabilities, injury also causes long-term sufferings on the survivors and their families, as well as the economic losses at societal level in terms of therapeutic and rehabilitative medical expenses and the loss of community workforce [1].

Injuries rank among the top causes of child mortality. In the age group 1-14 years, injuries remained as the second leading cause consistently from 2004 to 2013, with exceptions in 2009 and 2010. In these two years, injuries were the top leading cause of death in this age group [2].

In Hong Kong, a review was conducted about the child death cases that occurred from 2006 to 2013 and were reported to the Coroner's Court. The review showed that 111 cases died of accidents, with traffic (39.6%), fall (21.6%), drowning (16.2%) and choking (9%) being the leading types of fatal accidents [3].

Injury is common among children. In the Child Health Survey 2005-2006 [4], a total of 7,393 land-based non institutionalized children aged 14 and below was included in the review, the prevalence of injury that needed medical advice or treatment in the 12 months preceding the survey was 4.4%, being higher in male (5.4%) than female (3.2%) children. In children reported to have injuries that needed medical advice or treatment in the 12 months preceding the survey, the three commonest types were fall injury (31.6%), sports-related injury (29.3%) and bicycle-related injury (8.5%). In these children, the average number of injuries in the 12 months preceding the survey was 1.9, with those aged 11 to 14 having the highest average number of 2.3.

In the Injury Survey conducted in 2008 [1], the proportion of children who had sustained injury in the 12 months before the survey were 2.6% in the age group 0-4 years and 5.7% in those aged 5-14. The leading cause of injury episodes was falls in children aged 0-14. Sprain and sports ranked the second in the age group 0-4 and 5-14 respectively.

Such patterns were consistent with findings of a study related to Accident and Emergency Department (AED) attendance. From 2001 to 2012, there were in average 61,879 cases of child injury leading to AED attendance in Hong Kong per year. Domestic injury was the commonest type of injury for children aged 0 to 9 years, whereas sports injury was the commonest for those aged 10 to 19 years [5].

### **References**

1. Injury Survey 2008. Hong Kong SAR: Department of Health.
2. Action Plan to Strengthen Prevention of Unintentional Injuries in Hong Kong 2014. Hong Kong SAR: Department of Health.
3. Third Report of the Child Fatality Review Panel. August 2017. Hong Kong SAR: Social Welfare Department.
4. Child Health Survey 2005-2006. Hong Kong SAR: Department of Health.
5. Chow CB, Ip P, Wong WHS. A geographical study of child injury in Hong Kong: Spatial variation among 18 districts. The University of Hong Kong. 2017 Apr.

## Chapter 2. Factors for Childhood Injuries

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Unintentional injuries of children most commonly occur in and around the home. Primary care physicians have the advantage of having good knowledge of the children's family and social life. When managing childhood injuries, one major task is to identify and correct the risk factors to reduce the chance of recurrence. A detailed social history is thus essential.

Primary care doctors may take note of the following groups of closely related factors that may increase risk of childhood injuries.

- Child factors:
  - Age: Children's physical built, cognitive abilities and activities change as they grow. Certain types of injury are more common in a particular stage of life. For example, smaller airway size of younger children makes them more vulnerable to aspiration and suffocation. Preschoolers with increased motor skills are more likely to suffer a serious injury than young infants while adolescents may engage in risk taking behaviour like drinking [1,2].
  - Gender: male higher than female [1]
  - Development: The types of injuries that children experience are related to their stage of physical and psychological development. [3] For instance, grasping and drinking behaviour of children aged 1 to 3 years is linked to higher risk of poisoning [1].
  - Behavioural characteristics: children with difficult or hard-to-manage behavioral characteristics are at higher risk of injury than other children [2].
  - Underlying medical condition or disability
- Parents / carers factors:
  - Knowledge and behaviours of parents / carers [2]
  - Risk perception of parents / carers [2]
- Environmental factors:
  - Physical environment of the home
  - Overcrowding or homelessness
  - Availability of safety equipment

- Agent factors: Many products pose an increased risk to children because they are designed around the needs of adults [3]. Modification of products can reduce the risk or severity of injury [1].

The WHO World Report on Child Injury Prevention 2008 listed out the risk factors for common types of childhood injury including falls, drowning, poisoning, burns and traffic accidents. Below is the summary of the commonest risk factors according to the child, parent / carer, agent, physical environment and socioeconomic factors:

	<b>Falls</b>
<b>Child</b>	<ul style="list-style-type: none"> <li>• Age: children under 3 years old often fall from furniture; older children are more likely fall from playground equipment</li> <li>• Gender: male</li> <li>• Pre-existing disability</li> </ul>
<b>Parent / carer</b>	<ul style="list-style-type: none"> <li>• Lack of awareness and supervision</li> </ul>
<b>Agent</b>	<ul style="list-style-type: none"> <li>• Lack of protective equipment or barriers that reduce the chance or severity of an injury in the event of a fall</li> </ul>
<b>Physical environment</b>	<ul style="list-style-type: none"> <li>• Lack of access to safe play spaces; lack of preventive measures such as stair gates and guard rails</li> </ul>
<b>Socioeconomic environment</b>	<ul style="list-style-type: none"> <li>• Poverty; single-parent family</li> </ul>

	<b>Drowning</b>
<b>Child</b>	<ul style="list-style-type: none"> <li>• Age and development: drowning mortality rate is highest in 1-4 years old children and another smaller peak in late adolescent, which is related to developmental processes in young children (lack of awareness of danger among mobile toddlers) and experimentation among adolescents (alcohol consumption by adolescent swimmers)</li> <li>• Gender: male</li> <li>• Underlying medical condition, e.g. epilepsy</li> </ul>
<b>Parent / carer</b>	<ul style="list-style-type: none"> <li>• Lack of supervision, alcohol consumption, illiterate</li> </ul>
<b>Agent</b>	<ul style="list-style-type: none"> <li>• Lack of personal flotation devices or lifeguards</li> </ul>

<b>Physical environment</b>	<ul style="list-style-type: none"> <li>Lack of barriers to prevent children dropping into water; slippery, uneven, unstable or steep surfaces near or in water</li> </ul>
<b>Socioeconomic environment</b>	<ul style="list-style-type: none"> <li>Poverty; large families</li> </ul>

	<b>Poisoning</b>
<b>Child</b>	<ul style="list-style-type: none"> <li>Age and developmental factors: young children are more susceptible to poisoning since they tend to put objects into their mouth, and their body systems are not mature to eliminate toxins</li> <li>Gender: male</li> </ul>
<b>Parent / carer</b>	<ul style="list-style-type: none"> <li>Lack of supervision; lack of awareness of toxicity and poisoning risks</li> </ul>
<b>Agent</b>	<ul style="list-style-type: none"> <li>Ease of opening package; attractiveness of substance; inadequate labelling</li> </ul>
<b>Physical environment</b>	<ul style="list-style-type: none"> <li>Cupboards within easy reach of children; absence of locking devices on cabinets; exposure to agents visible to children</li> </ul>
<b>Socioeconomic environment</b>	<ul style="list-style-type: none"> <li>Poverty; lack of appropriate place and containers to store the poisons</li> </ul>

	<b>Burns</b>
<b>Child</b>	<ul style="list-style-type: none"> <li>Age: thinner skin of infant is more susceptible to deeper burns</li> <li>Gender: burns are the only type of unintentional injury where females have higher mortality rate than males</li> <li>Development: experimentation; lack of knowledge about risks of fire /scald</li> </ul>
<b>Parent / Carer</b>	<ul style="list-style-type: none"> <li>Lack of supervision; smoking in the home or in bed; illiteracy</li> </ul>
<b>Agent</b>	<ul style="list-style-type: none"> <li>Storage of flammable substances in the house; combustibles, matches or lighters accessible to children; unsafe stoves or lamps</li> </ul>
<b>Physical environment</b>	<ul style="list-style-type: none"> <li>Overcrowded households; no separation between cooking area and other areas; absence of flame-retardant household materials</li> </ul>

<b>Socioeconomic environment</b>	<ul style="list-style-type: none"> <li>Poverty; unemployment</li> </ul>
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	<b>Traffic Accidents</b>
<b>Child</b>	<ul style="list-style-type: none"> <li>Age: older age group due to increased mobility</li> <li>Gender: male</li> <li>Development: lack of knowledge and judgment to manage the road environment</li> <li>Behavioural characteristics: risk-taking / impulsive behaviour; disobedience</li> </ul>
<b>Parent / carer</b>	<ul style="list-style-type: none"> <li>Lack of supervision</li> </ul>
<b>Agent</b>	<ul style="list-style-type: none"> <li>Child restraints and seat-belts not fitted or incorrectly used; bicycle and motorcycle helmets not used</li> </ul>
<b>Physical environment</b>	<ul style="list-style-type: none"> <li>Lack of proper cycling tracks; roadside objects such as trees and poles</li> </ul>
<b>Socioeconomic environment</b>	<ul style="list-style-type: none"> <li>Lack of safety culture in the car and on the road</li> </ul>

Child Health Survey 2005-2006 [4] and Injury Survey 2008 [5] showed that the safety awareness and practice among our parents are not high. Only 59.5% of parents always cover electrical sockets to avoid insertion of fingers or other objects in children under 5 years old. 50% of the households did not always label medications or poisoning agents clearly.

### References

1. World report on child injury prevention, World Health Organization (WHO) 2008
2. Janet Abboud Dal Santo, Childhood Unintentional Injuries: Factors Predicting Injury Risk Among Preschoolers, Journal of Paediatric Psychology 2004
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4. Child Health Survey 2005-2006. Hong Kong SAR: Department of Health.
5. Injury Survey 2008. Hong Kong SAR: Department of Health.

## Chapter 3. Injury Prevention

Injuries are not random events but they are predictable and hence can be prevented. Experience from countries with the best safety records demonstrates that practicing evidence-based strategies to provide safer physical and social environments can reduce injury mortality and morbidity substantially [1].

Injury prevention requires multi-sectoral approaches encompassing legislation, product and environmental modification, education and skills training, finally emergency medical care [1]. Primary care doctors besides providing emergency care can help to prevent injury by providing anticipatory counselling on injury hazards and specific measures to minimize those hazards. Table 1 demonstrates some good-practice strategies to prevent childhood injury in different areas [1, 2, 3].

**Table 1. Some good practice strategies for childhood injuries prevention**

Areas of injury prevention	Recommendations for parents and carers
Falls	<ul style="list-style-type: none"> <li>• Install window guards or window stops.</li> <li>• Use of gates for stairways.</li> </ul>
Drowning	<ul style="list-style-type: none"> <li>• Never leave bathing unattended.</li> <li>• Vigilant adult supervision during swimming.</li> <li>• Wear personal flotation devices around water.</li> <li>• Provide water safety skills training.</li> </ul>
Poisoning	<ul style="list-style-type: none"> <li>• Put all poisoning agents (such as medications, cleansing products and pesticides) out of reach of children.</li> <li>• Keep poisoning agents in their original child-proof containers.</li> <li>• Use child-resistant locks on cupboards containing cleansing products and other household chemicals.</li> <li>• Dispose out-of-date or unwanted medications, chemicals and batteries properly.</li> <li>• Follow the instructions strictly when giving medications to children.</li> </ul>

Burns	<ul style="list-style-type: none"> <li>• Provide fire safety skills training.</li> <li>• Preset water heater temperature to less than 50°C.</li> <li>• Separate cooking area from living area.</li> <li>• Avoid smoking.</li> <li>• Cover electrical outlets.</li> </ul>
Traffic accidents	<ul style="list-style-type: none"> <li>• Never leave children unattended in the car.</li> <li>• Age-appropriate child restraints should be used.</li> </ul>

### Injury prevention in different life stages

Anticipatory guidance is a major component of well-child care and injury visits, and parents value the advice from their doctors. Therefore, injury prevention counselling should be an integral part of the medical care provided for all infants, children and adolescents [4]. Primary health care professionals can help by providing age-appropriate safety counselling in the office. Home safety education is effective in increasing a range of safety practices [5].

Counselling on safety practices should be tailored to the age of child and family's specific needs [4-7]. Besides general safety practices as shown in table 1, recommendations specific to different age group demonstrated in tables 2 to 6 can be given to parents [4, 6, 8, 9]. Parents are advised to be the role model for the child's behaviour and modify the child's environment to ensure safety. As the child grows up, counseling should be directed towards the child or adolescent who becomes responsible for his or her own behaviour. Physicians are encouraged to document injury prevention counselling in the medical record [4].

The American Academy of Pediatrics has developed The Injury Prevention Program (TIPP) since 1983 in order to educate parents to prevent common injuries [6]. TIPP facilitates health care providers with age-appropriate questionnaires and health education materials. The program has been proven to be effective in increasing knowledge and use of safety equipment [4].

In our locality, the Family Health Services had developed age-specific leaflets on injury prevention, which can be distributed to enhance parents' knowledge. Checklist on

home modification and in different areas can be used to reinforce use of safety measures. (Please refer to **Annex 1** for related resources.)

### Infancy (0-12 months of age)

Infants start to reach out and grasp object by 4 to 5 months old. They will gradually develop skills of sitting, standing and walking, and try to explore their surroundings. Common injuries in children 0-1 year old are falls and burns [10,11]. It is important for parents to remove all potential risks to protect their children from injuries.

**Table 2. Injury prevention measures for infants.**

Areas of injury prevention	Recommendations for parents and carers
Falls	<ul style="list-style-type: none"> <li>• Never leave a baby alone on a diaper changing mat, an adult bed or a sofa, even for a brief moment.</li> <li>• Raise and lock the side rails securely whenever leaving a baby in a cot.</li> <li>• Avoid infant walker.</li> </ul>
Burns	<ul style="list-style-type: none"> <li>• Put cold water before hot water when preparing to bath baby.</li> <li>• Test water temperature before placing a child into a tub.</li> <li>• Avoid heating milk or food for baby in the microwave because microwave ovens heat fluid or food unevenly.</li> <li>• Test the temperature of milk or any hot food before feeding a child.</li> <li>• Avoid drinking or carrying hot liquids when a child is nearby.</li> <li>• Keep children out of reach from hot objects and away from the kitchen.</li> </ul>
Choking and suffocation	<ul style="list-style-type: none"> <li>• Supervise infants when feeding.</li> <li>• Avoid hard and small foods such as nuts.</li> <li>• Do not dress infants in baby clothes with long drawstrings, ribbons or cords.</li> <li>• Do not put anything around a baby's neck such as</li> </ul>

	<p>pacifier or jewelry.</p> <ul style="list-style-type: none"> <li>• Keep plastic bags and small items out of reach of infants.</li> <li>• Ensure toys are free from small parts that could be swallowed.</li> </ul>
Drowning	<ul style="list-style-type: none"> <li>• Empty and properly store buckets immediately after use.</li> </ul>
Sleep safety	<ul style="list-style-type: none"> <li>• Maintain a smoke-free environment.</li> <li>• Place the infant on a firm sleep surface, not on a quilt, pillow, sheepskin or bean bag etc.</li> <li>• Sleep the infant in their own sleeping cot.</li> <li>• Sleep the infant on the back.</li> <li>• Keep the head and face uncovered.</li> <li>• Avoid having objects (e.g. pillows, soft toys, pacifier cords) and loose bedding where your baby is sleeping</li> </ul>
Traffic accidents	<ul style="list-style-type: none"> <li>• Keep your child in a safety seat during every trip, even if travelling a short distance.</li> <li>• Seat a child in the rear seat of the car.</li> <li>• Infants up to 12 months should be carried in a carrycot with their heads in the middle of the car.</li> <li>• Babies above 9 months old who can sit up by themselves should be placed in child safety seats.</li> </ul>

Please refer to **Annex 1** for resources on safety measures for newborn and safety note on using a baby carrier.

### Toddlers (1-3 years of age)

Being able to walk and climb, toddlers are eager to explore the places that were previously out of reach. They love to examine objects with their hands and put things into their mouth. Falls, poisonings and scalds are common injuries leading to AED attendance for those under 2 years old [10]. Suffocation and finger pinching are prevailing household injuries.

**Table 3. Injury prevention measures for toddlers**

Areas of injury prevention	Recommendations for parents and carers
Falls	<ul style="list-style-type: none"> <li>• Always supervise children at home and in playgrounds.</li> <li>• Install window guards and fences or wire meshes around balconies.</li> <li>• Encourage children less than 3 years to play on equipment under one metre in height.</li> </ul>
Burns	<ul style="list-style-type: none"> <li>• Test the temperature of milk or any hot food before feeding a child.</li> <li>• Keep children out of reach from hot objects and away from kitchen.</li> <li>• Keep electrical cords, matches and lighters out of a child's reach.</li> <li>• Test water temperature before placing a child into a tub.</li> <li>• Avoid using table cloth / mat.</li> </ul>
Choking and suffocation	<ul style="list-style-type: none"> <li>• Avoid hard and small foods such as nuts.</li> <li>• Ensure toys are free from small parts that could be swallowed.</li> <li>• Keep plastic bags away from children.</li> <li>• Avoid using foldable furniture such as chairs and tables.</li> <li>• Avoid using curtain cords, or tied them properly.</li> </ul>
Finger pinching	<ul style="list-style-type: none"> <li>• Beware of children when you are opening or closing doors.</li> <li>• Fix the doors in place with magnets or use finger pinch guards.</li> <li>• Have safety locks fitted to cupboards and drawers.</li> </ul>
Poisoning	<ul style="list-style-type: none"> <li>• Put all poisoning agents (such as medications, cleansing products and pesticides) out of reach of children.</li> <li>• Keep poisoning agents in their original child-proof containers.</li> </ul>
Traffic accidents	<ul style="list-style-type: none"> <li>• Use age-appropriate child safety seat.</li> <li>• Seat a child in the rear seat of the car.</li> </ul>

Please refer to **Annex 1** for resources on safety measures for toddlers.

### Preschool (3-6 years of age)

Preschool children are active and fond of exploring new objects all around. Common furniture such as doors and curtain cords can be hidden traps of finger pinching and suffocation. An estimated 50% of all injuries among preschool children attending local accident and emergency departments are sustained in the home setting [12]. Recommendations for parents concerning injury prevention are stated in the following table.

**Table 4. Injury prevention measures for preschool children.**

Areas of injury prevention	Recommendations for parents and carers
Falls	<ul style="list-style-type: none"> <li>• Always supervise children in playgrounds, encourage children to play on equipment under 1.5 metres in height.</li> <li>• Avoid using bunk beds. Parents who use bunk beds should avoid letting children sleep on the upper deck.</li> <li>• Install window guards and fences or wire meshes around balconies.</li> </ul>
Burns	<ul style="list-style-type: none"> <li>• Keep electrical cords, matches and lighters out of a child's reach.</li> <li>• Keep children out of kitchen.</li> <li>• Do not place teapots, kettles or thermo flasks near the edge of a table or in a place where children can reach.</li> </ul>
Choking and suffocation	<ul style="list-style-type: none"> <li>• Keep plastic bags away from children.</li> <li>• Avoid using foldable furniture such as chairs and tables.</li> <li>• Avoid using curtain cords, or tied them properly.</li> </ul>
Finger pinching	<ul style="list-style-type: none"> <li>• Beware of children when you are opening or closing doors.</li> <li>• Fix the doors in place with magnets or use finger pinch guards.</li> <li>• Have safety locks fitted to cupboards and drawers.</li> </ul>
Traffic accidents	<ul style="list-style-type: none"> <li>• Use age-appropriate child safety seat.</li> <li>• Seat a child in the rear seat of the car.</li> <li>• Do not let a child cross the street alone.</li> </ul>

	<ul style="list-style-type: none"> <li>Supervise children closely in places where there are cars.</li> </ul>
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Please refer to **Annex 1** for resources on safety measures for preschool children.

### School age (6-12 years of age)

Injuries in school age children occur in a variety of environment including schools, sports facilities and their neighbourhoods. Injury prevention advice begins to be more focused on the child's behaviour [4]. Parents are suggested to learn basic first aid, as well as practice the following safety measures [8].

**Table 5. Injury prevention measures for school age children.**

Areas of injury prevention	Recommendations for parents and carers
Burns	<ul style="list-style-type: none"> <li>Do not let children play with fire or fireworks.</li> </ul>
Traffic accidents	<ul style="list-style-type: none"> <li>A child harness or a booster seat should be used until the seat belt fits correctly.</li> <li>Ordinary seat belts should be used for children weighing above 36 kg.</li> <li>Provide education for pedestrian safety skills.</li> </ul>
Cycling accidents	<ul style="list-style-type: none"> <li>Helmet should always be worn.</li> <li>Provide training on cycling skills.</li> <li>Never ride with passengers on bike.</li> </ul>
Drowning	<ul style="list-style-type: none"> <li>Teach children to swim and appropriate rules for water play.</li> <li>Never allow children to swim alone.</li> <li>Advise to use flotation devices in any boating activity.</li> </ul>
Sports accidents	<ul style="list-style-type: none"> <li>Remind the use of appropriate safety equipment for the particular sports.</li> </ul>

### Adolescence (13-18 years of age)

Adolescents may be affected by peer pressure and undergo risk behaviours which lead to injuries. The leading causes of injuries among adolescents are motor related injury, animal related injury and cut or piercings [10]. Risk taking behavior is more prevalent among males, early school leavers, less parental supervision, peers who also actively engage in risk-taking behavior and negative attitudes to authority [8].

Primary care providers can help to reduce the likelihood of adolescent injury risks, which may include [8]:

- providing young people with health education to improve attitudes towards injury avoidance and support risk management decision making skills
- encouraging adolescents to participate in school community and build up support in school

**Table 6. Injury prevention measures for adolescence.**

<b>Areas of injury prevention</b>	<b>Recommendations for adolescents</b>
Traffic accidents	<ul style="list-style-type: none"> <li>• Encourage seat belt use.</li> </ul>
Drowning	<ul style="list-style-type: none"> <li>• Avoid swimming in locations without lifeguard.</li> <li>• Avoid of consumption of alcohol and other drug during aquatic recreation activities.</li> <li>• Wear flotation devices in any boating activity.</li> </ul>
Sports accidents	<ul style="list-style-type: none"> <li>• Use appropriate safety equipment for the particular sports.</li> </ul>
Cycling accidents	<ul style="list-style-type: none"> <li>• Helmet should always be worn.</li> <li>• Provide training on cycling skills.</li> <li>• Never ride with passengers on bike.</li> </ul>

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## Annex 1

## Resources on injury prevention

Organisation	Resource	Website
Department of Health, Family Health Service	<b>Providing a safe environment for your baby</b> 給寶寶一個安全環境	<a href="http://s.fhs.gov.hk/tdjz4">http://s.fhs.gov.hk/tdjz4</a> (English) <a href="http://s.fhs.gov.hk/o5rb0">http://s.fhs.gov.hk/o5rb0</a> (Chinese)
	<b>Is Your Newborn Baby Safe?</b> 你的初生寶寶安全嗎？	<a href="http://s.fhs.gov.hk/uoghe">http://s.fhs.gov.hk/uoghe</a> (English) <a href="http://s.fhs.gov.hk/rokij">http://s.fhs.gov.hk/rokij</a> (Chinese)
	<b>Protect Baby from Sudden Infant Death Syndrome</b> 預防嬰兒猝死症	<a href="http://s.fhs.gov.hk/086ly">http://s.fhs.gov.hk/086ly</a> (English) <a href="http://s.fhs.gov.hk/2mm66">http://s.fhs.gov.hk/2mm66</a> (Chinese)
	<b>Baby's safe sleeping position and environment</b> <b>You are the one to care (Audio-Visual Resources)</b> 嬰兒安全睡姿與環境 時刻緊記全靠你 (視像資訊)	<a href="http://s.fhs.gov.hk/9uun7">http://s.fhs.gov.hk/9uun7</a> (English)  <a href="http://s.fhs.gov.hk/9ejjn">http://s.fhs.gov.hk/9ejjn</a> (Chinese)
	<b>Safety note on using a baby carrier</b> 嬰兒揹帶使用安全須知	<a href="http://s.fhs.gov.hk/d6s7x">http://s.fhs.gov.hk/d6s7x</a> (English) <a href="http://s.fhs.gov.hk/scf7n">http://s.fhs.gov.hk/scf7n</a> (Chinese)
	<b>Is Your Baby Safe at Home?</b> 你的寶寶安全嗎？	<a href="http://s.fhs.gov.hk/ndfqc">http://s.fhs.gov.hk/ndfqc</a> (English) <a href="http://s.fhs.gov.hk/y3kzn">http://s.fhs.gov.hk/y3kzn</a> (Chinese)

	<b>Home Safety (Audio-Visual Resources)</b> 家居安全(視像資訊)	<a href="http://s.fhs.gov.hk/9tkv1">http://s.fhs.gov.hk/9tkv1</a> (English) <a href="http://s.fhs.gov.hk/1bh35">http://s.fhs.gov.hk/1bh35</a> (Chinese)
	<b>Love Your Child, Prevent Injuries (0-1 year)</b> 愛護兒童慎防意外 (初生至 一歲)	<a href="http://s.fhs.gov.hk/5zjie">http://s.fhs.gov.hk/5zjie</a> (English) <a href="http://s.fhs.gov.hk/4q4h7">http://s.fhs.gov.hk/4q4h7</a> (Chinese)
	<b>Love Your Child, Prevent Injuries (1-3 year)</b> 愛護兒童慎防意外(一歲至 三歲)	<a href="http://s.fhs.gov.hk/g5pnm">http://s.fhs.gov.hk/g5pnm</a> (English) <a href="http://s.fhs.gov.hk/wluld">http://s.fhs.gov.hk/wluld</a> (Chinese)
	<b>Love Your Child, Prevent Injuries (3-5 year)</b> 愛護兒童慎防意外(三歲至 五歲)	<a href="http://s.fhs.gov.hk/nzm9s">http://s.fhs.gov.hk/nzm9s</a> (English) <a href="http://s.fhs.gov.hk/uv2eq">http://s.fhs.gov.hk/uv2eq</a> (Chinese)
<b>Hong Kong Poison Control Network</b>	<b>Prevention of Childhood Poisoning; Household Cleaner Safety</b>	<a href="http://www.hkpcn.org.hk/eng/ER.html">http://www.hkpcn.org.hk/eng/ER.html</a> (English) <a href="http://www.hkpcn.org.hk/chi/ER.html">http://www.hkpcn.org.hk/chi/ER.html</a> (Chinese)
<b>Transport Department</b>	<b>Safe Cycling Guides</b>	<a href="http://www.td.gov.hk/en/road_safety/safe_cycling_guides/index.html">http://www.td.gov.hk/en/road_safety/safe_cycling_guides/index.html</a> (English) <a href="http://www.td.gov.hk/tc/road_safety/safe_cycling_guides/index.html">http://www.td.gov.hk/tc/road_safety/safe_cycling_guides/index.html</a> (Chinese)

## Chapter 4. Non Accidental Injury (NAI)

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Physical abuse can cause significant morbidity and mortality in children and lead to long term physical and mental health problems in adulthood [1]. Primary care providers have a vital role in identification of suspected non accidental injury (NAI) and referral to specialist for further investigation and management.

History is the essential element in the diagnosis of child NAI. However, the clinical interview can be very distressing to the child. In case of suspected child abuse, primary care providers can focus on obtaining information to establish the suspicion and to determine whom to refer for further action, with special attention to the injuries and immediate safety of the child. The in-depth interview of the traumatic abuse incident can be left to the multi-disciplinary team of specialists of child abuse. For cases in need of full medical or forensic examination, the child should be referred to medical professionals with expertise in child abuse examination and the number of examination must be kept to a minimum [2].

### **Circumstances suggestive of NAI**

Minor injuries in children are very common and most are not related to abuse. Identification of physical abuse can be challenging since perpetrators usually deny their actions and child victims are often too young or too frightened to report the events. When encountering children with injuries, primary care providers should suspect for possible NAI if the following histories are present [1, 3, 4]:

1. There is either no or a vague explanation accountable for a significant injury.
2. There is an explicit denial of trauma in a child with obvious injury.
3. An important detail of the explanation changes in a substantive way.
4. The provided explanation is not compatible with the pattern, age or severity of the injury.
5. The given explanation is inconsistent with the child's physical and/or developmental capabilities.
6. Delay in seeking medical care for significant injury.
7. Different witnesses offer significantly different explanations for the injury.

8. Young infants present with non-specific symptoms of possible head trauma, including unexplained vomiting, lethargy, irritability, apnoea or seizures.

### **Physical findings suggestive of NAI**

Although only a few single injuries are specific for NAI, the mechanism, severity and timing of the wound provide clues which raise the alert of physical abuse. Physical findings which suggest NAI include the following [1, 3, 4]:

1. Any injury to a young, pre-ambulatory infant, such as bruises, mouth injuries, fractures, and intracranial or abdominal injury.
2. Multiple organ systems injuries.
3. Multiple injuries in different stages of healing.
4. Multiple bruises in clusters.
5. Patterned injuries like clear imprint of a hot instrument, glove and stocking scald, looped marks from extension cords or bruises of uniform shape due to opposing arc from a bite.
6. Injuries away from bony prominences or other unusual locations, for example, over the torso, ears, face, neck or upper arms.
7. Evidence of child neglect, including malnutrition, extensive dental caries, untreated diaper dermatitis or neglected wound care.

The following findings should raise a suspicion for NAI in children with fractures [1, 3, 4]:

1. Fractures in non-ambulatory infants, especially in those without a clear history of trauma or a known medical condition that predisposes to bone fracture.
2. Multiple, especially bilateral fractures.
3. Infants and children with rib fracture, especially posterior.
4. Infants and toddlers with mid-shaft humerus or femur fractures.
5. Fractures of uncommon sites which are highly specific for NAI include classic metaphyseal, ribs, sternal, scapular and spinous process; fractures of moderate specificity are epiphyseal separations, vertebral body, digital and complex skull fractures.
6. The history of trauma does not explain the resultant fracture.
7. Fractures at different stages of healing.

## Management of suspected NAI

If NAI is suspected, primary care providers have important role in stabilization of the child's injuries, assessment of the child's immediate safety, documentation of clinical findings and reporting to the relevant authorities. In addition, they can contribute to the long term ongoing family support and monitoring of the child's well-being [3].

The Social Welfare Department has developed a Procedural Guide for Handling Child Abuse Cases to provide guidance to serve the best interests of children [2]. For suspected NAI where hospitalization for observation or treatment is necessary, the case should be sent to the Accident and Emergency Department. In circumstances that suggest a criminal offence may have been committed, the case should be reported to the Police to safeguard the welfare of the child [2].

For cases where in-patient treatment or urgent intervention is not required, inform the Social Welfare Department (SWD) for further action. If the child is a known case under the care of a SWD or non-government organisation (NGO) unit, the relevant unit should be contacted. Primary care providers can consult Social Work Officer of the Family and Child Protective Services Unit (SWO FCPSU) for advice if the child is not receiving service from any SWD/NGO unit. The Medical Social Worker (MSW) of SWD / NGO would initiate the child protection mechanism, conduct initial social assessment and liaise with other parties in multidisciplinary approach and decide on the appropriate action to be taken. Primary care providers should provide necessary assistance as far as possible [2]. Information on the FCPSU and contacts in different districts can be found from the following link:

[http://www.swd.gov.hk/doc/family/sw/Introduction%20of%20FCPSU\\_Eng\\_Rev\\_Aug%202015.pdf](http://www.swd.gov.hk/doc/family/sw/Introduction%20of%20FCPSU_Eng_Rev_Aug%202015.pdf)

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## Chapter 5. Conclusion

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Injury is a major cause of mortality, morbidity and disability in children. However, it is highly preventable. Primary health care providers have numerous opportunities to identify parents and children at higher risk of unintentional injury and provide them with age-appropriate counselling.

Anticipatory guidance for injury prevention should be an integral part of the medical care provided for all infants, children, and adolescents. Parents will need repetitive reinforcing messages to be delivered in an effective manner that are relevant to their children. Physicians are encouraged to document injury-prevention counseling in the medical record. They can either prepare their own checklist of anticipatory care or utilize the ready-made checklists such as the one in chapter 8 of Module on Immunisation of Hong Kong Reference Framework for Preventive Care for Children in Primary Care Settings.

Counseling for the prevention of unintentional injuries needs to be appropriate for the child's age. Initially, it is necessary for the counseling to be provided to the parents or caregivers as they are the role model for the child's behavior and are most capable of modifying the child's environment. As children mature, counseling should be directed increasingly toward children or adolescents as they become responsible for their own behavior.

Clinical interventions are most effective when they are combined with an array of other health education and behavior change strategies such as environmental modification and use of safety devices. Local resources as mentioned in Annex 1 can be used to facilitate health education. Injury prevention requires multi-sectoral efforts. Collaboration with family, social workers, teachers and coaches enhances adequate protection and well-being of children.