

CHILD INJURY PREVENTION AND CHILD HEALTH SUPERVISION

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Childhood injury is an important public health problem globally. The definition of childhood injury according to the Department of Trade and Industry, Home and Leisure Accident Surveillance System (HASS/LASS) in the United Kingdom is: 'Any unintentional injury or suspected injury, no matter how caused, *except* deliberately self-inflicted injuries, or suspected suicides (suspected child overdoses are included) and injuries resulting from physical attacks from another person.' The United Nations Children's Fund (UNICEF) and The Alliance for Safe Children (TASC) have conducted community-based surveys on child injury prevention in six East and South Asian countries. Data from these studies suggested that most nonfatal childhood injuries occur at home, particularly amongst toddlers.

Risk factors for childhood injury include age, gender, accident-proneness, and socioeconomic factors. Causes of unintentional injury at different ages reflect a child's state of development, their perception of danger, and the degree of exposure to different hazards at various ages. Children ≤ 4 -years- of-age have the most accidents in the home, while those over 4-years-old have an increasing number of childhood injuries that occur on the road, at school, or during leisure activities.

Regarding gender, boys are at higher

risk of unintentional injury than girls are, in part due to over activity, inattentiveness, poor gross motor and coordination skills, and accident proneness. Socioeconomic factors that have been reported to influence childhood injury include overcrowding, maternal education, maternal income, single parents, social class, and the external environment of the child also influence the risk of childhood injury.

Child health supervision and injury prevention relative to a child's age is summarized in Table 1. To be safe, cribs are recommended to have bars ≤ 6 cm apart and to weave a piece of cloth between the bars if they are too far apart. The crib should not have corner posts that stick up; if so, the posts should be removed. Window ropes are another bedroom hazard that can cause infant choking, particularly if near cribs, and parents should be made aware of this potential danger.

Drowning is a common childhood injury. It should be noted that a depth of water in a tub of just 1-2 inches might lead to infant drowning. It is advisable for caregivers therefore, to never leave children unattended in tubs or swimming pools. Starting swimming lessons is recommended to start after a child is 4 years old. Elimination of potential hazards will also reduce the risk of drowning, including emptying buckets and water containers immediately after use,

Table 1
Child health supervision and injury prevention relative to a child's age.

Age	Developmental milestones	Anticipatory guidance for injury prevention
1 month	<ul style="list-style-type: none"> • Raises head • Blinks in response to bright lights • Focuses and follows with eyes • Responds to sounds 	<ul style="list-style-type: none"> • Falls • Shaken baby syndrome^a
2 months	<ul style="list-style-type: none"> • Motor: holds head up temporarily • Sensory: follows objects visually, looks at faces, responds to sounds • Communication : cries, coos • Social: social smile, responds to voices 	<ul style="list-style-type: none"> • Car safety • Falls from rolling over • Should not be held whilst parent is drinking hot liquid • Unbreakable, free of sharp-edge infant toys
4 months	<ul style="list-style-type: none"> • Gross motor: holds head erect, raises body using arms from prone position • Fine motor: reaches for and grabs objects, plays with hands, grabs rattle, releases object voluntarily • Sensory: follows object visually 180 degrees, responds to sounds • Communication: coos, blows bubbles • Social: social smile, laughs 	<ul style="list-style-type: none"> • Car safety • Falls from rolling over • Should not be held whilst parent is drinking hot liquid • Unbreakable, free of sharp-edge infant toys
6 months	<ul style="list-style-type: none"> • Gross motor: holds head high, raises body using arms, rolls over, sits with support • Finemotor: plays with hands, holds a rattle, transfers objects from hand to hand • Communication: turns head towards sounds, familiar voices, imitates sounds • Social: smiles, laughs, coos, excitement when interacts with parents 	<ul style="list-style-type: none"> • Avoid use of baby walkers • Protection from hot liquids • Unbreakable, free of sharp edge infant toys • Prevention of contact with electrical sockets and cords
9 months	<ul style="list-style-type: none"> • Gross motor: sits without support, crawls, creeps with hands • Fine motor: picks up small objects, brings hands to mouth, feeds self, bangs objects together • Communication: responds to own name, waves bye-bye, babbles, imitates sounds, vocalization • Social: peek a boo, plays pat-a-cake, fear of strangers 	<ul style="list-style-type: none"> • Safety crib • Protection from hot liquids • Avoidance of easily aspirated foods consumed using pincer grip (eg, peanuts, peas, corn, carrot sticks, buttons coins)
12 months	<ul style="list-style-type: none"> • Gross motor: stands momentarily, crawls, pulls self up, walks with support • Fine motor: neat pincer grasp, feeds self using spoon • Communication: single word, follows simple commands, names body parts, plays with adult-like objects eg, telephone 	<ul style="list-style-type: none"> • Toxic substance ingestion • Motorvehicle injuries • Protection from hot liquids • Avoidance of easily aspirated foods consumed using pincer grip • Falls from windows

Table 1 (Continued).

Age	Developmental milestones	Anticipatory guidance for injury prevention
15 months	<ul style="list-style-type: none"> • Social: Peek a boo, plays pat-a-cake, fear of strangers • Gross motor: walks without support • Fine motor: feeds self with fingers or spoon, scribbles with crayons, stacks two blocks • Communication: single words, jargon, understands single commands, pretends to use objects eg, telephone • Social: communicates pleasure or displeasure, fear of strangers, plays with parents 	<ul style="list-style-type: none"> • Drowning • Toxic substance ingestion • Car safety • Protection from hot liquids and stoves • Stairwell safety gate use • Prevention of falls from climbing • Drowning • Electrical injuries – plastic guard use at plugging outlets
18 months	<ul style="list-style-type: none"> • Gross motor: walks quickly, runs, walks up stairs with one hand held, climbs • Fine motor: eats with spoon/fork, scribbles with crayons, stacks 3-4 blocks, dumps raisin from a bottle • Communication: may start to put 2 words together, understands commands, pretends to use objects (eg, telephone), points to body parts • Social: likes to play with other children • Other: toilet training 	<ul style="list-style-type: none"> • Toxic substance ingestion • Car safety • Protection from hot liquids and stoves • Locking of safety gates at stairwells • Prevention of falls from climbing • Drowning • Electrical injuries–plastic guard use at plugging outlets
2 years	<ul style="list-style-type: none"> • Gross motor: runs, walks up and down stairs, jumps on the spot, throws ball overhead • Fine motor: eats with spoon/fork, opens doors, draws vertical line, brushes own teeth with help • Communication: speaks several two-word phrases, >50 word vocabulary, follows 1-2 step commands, uses pronouns • Social: imitates adults, plays in parallel with others • Others: toilet training, dresses with help 	<ul style="list-style-type: none"> • Toxic substance ingestion • Car safety • Protection from hot liquids and stoves • Locking of safety gates at stairwells • Prevention of falls from climbing • Drowning • Electrical injuries – plastic guard use at plugging outlets
4 years	<ul style="list-style-type: none"> • Gross motor: pedals tricycles, hops on one foot, balances on one foot • Fine motor: draws a square, draws a person with three to six body parts • Communication: extensive vocabulary, uses full sentences with at least six words, asks questions • Social: interactive pretend play, able to share • Others: buttons up, puts on shirts and socks, controlled urine and bowel movements 	<ul style="list-style-type: none"> • Toxic substance ingestion • Road safety, particularly with bicycles • Appropriate toys • Protection from hot liquids and stoves • Prevention of falls from climbing • Drowning • Dog bites

Table 1 (Continued).

Age	Developmental milestones	Anticipatory guidance for injury prevention
6 years	<ul style="list-style-type: none"> • Gross motor: rides bicycles, skips • Fine motor: draws a triangle, draws a picture (8-12 features), ties shoelaces, prints name • Communication: recognizes the alphabet, counts to 20, follows 3-4 commands • Social: recounts a personal story, plays with other children, knows left from right, knows morning from evening • Others: speaks fluently, sings 	<ul style="list-style-type: none"> • Toxic substance ingestion • Road safety, particularly with bicycles • Helmets • Review crossing streets at corners, understanding traffic lights • Appropriate toys • Drowning/swimming • Dog bites
10-12 years	<ul style="list-style-type: none"> • Gross motor: outdoor activities, sports • Fine motor: fine writing, fine art • Communication: understands and complies with rules at home and school • Social: makes friends in groups, displays self confidence • Others: responsibility of health, school work 	<ul style="list-style-type: none"> • Road safety, especially bicycles • Helmet use • Protective padding for exercise • Drowning/swimming • Child health supervision

^aShaken baby syndrome involves multiple organ systems: retinal hemorrhages in the eye, intraventricular hemorrhages in the brain, joint and bony fractures.

and paying special attention to children when in areas near open water. For safety near swimming pools, it is advisable to install four-sided isolation fencing at least 5 feet high, equipped with self-closing gates.

Falls are common childhood injuries. Safety gates at the tops and bottoms of stairwells may be used to prevent such injuries. Care should be taken to avoid the use of gates with large spaces between its slats as children could become trapped in the openings.

Nursemaid's elbow is an injury that occurs most typically when a child under 5 years old holds their arm flexed at the elbow and refuses to move, and an adult pulls on the arm. The result is radial head subluxation, which can be reduced by su-

pination of the arm.

To reduce the risk of poisoning in children, caregivers are advised to keep potentially poisonous substances in safe areas, such as safety cabinets, and child resistant safety caps should be utilized where possible. In Thailand, cleaning products are a frequent cause of childhood accidental toxic substance ingestion due to repackaging. The reuse of drinking bottles as holders for potentially toxic liquids should be avoided (eg, refilling drinking water bottles with gasoline can cause benzene injuries). Paint can potentially cause lead poisoning, and thus, a potential hazard warning should be labeled to inform caregivers.

Toys can also be a potential hazard for children, as any part of a toy may cause

Table 2
Automobile equipment and positions for children by age group.

Type	Age group	Position
Infant car seat	<1 yr; <9 kg	<ul style="list-style-type: none"> • Rear facing • Mid position of car • Back of car
Convertible seat	1-4 yrs; 9-18 kg	<ul style="list-style-type: none"> • Forward facing • Back of car
Booster seat	4-8 yrs	<ul style="list-style-type: none"> • Forward facing • Back of car
Back seat and seat belt	>8 yrs and height >143.5 cm All children 12 and under should ride in the back seat.	<ul style="list-style-type: none"> • Back seat • Safety belt

choking. When giving toys to children, caregivers should take note of labeling on whether the toy is suitable for the child's age group. The toy should be made of non-toxic materials, free of sharp edges, loose string, rope, ribbons, or a cord. Toy chests with lids should be avoided. For children <3 years of age, toy parts should be larger than 3.2 cm in diameter or 5.7 cm long.

In terms of car safety, a car seat is recommended for children of all age group using different equipment and positions (Table 2). Regarding road safety, it is recommended that children under 9 months should avoid travelling on bicycles, and children under 2 years should avoid travelling by motorcycles. Children who can cycle themselves should use helmets. Bicycles carrying children should have special seats fitted for this purpose. When reversing vehicles, adults should be aware of the possibility of children being in the path of the vehicle.

In conclusion, pediatricians should understand and be able to educate caregivers on childhood injuries and the potential risks within the home and environment.

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