Summary Report and Evaluation
Child Injury Prevention Project (2005-2010)

For UNICEF China

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Executive Summary

Injury is a leading cause of death for children 1-18 years old in China. This is due to the success of China in reducing child deaths caused by infectious and nutritional causes. Every year, more than 100,000 children die due to various types of injury, almost 1% of the global burden of child deaths. Injury deaths are only the tip of the iceberg. Non-fatal injury, especially permanent disability, imposes huge social burdens on families and results in a large economic burden to society at large.

After 30 years of economic growth, China has reached the stage where addressing child injury is necessary to protect Chinese children’s right to survive and enjoy safe and healthy development. In response to the changing epidemiology of child health, UNICEF has supported child injury prevention (CIP) in China since 2003. In the 2006-2010 Country Program cycle, the CIP project was placed under the Health and Nutrition Program in collaboration with various government counterparts. This was the first ever injury prevention project for UNICEF China.

In October 2010, an evaluation was conducted by a group of injury prevention experts from Beijing and Jiangxi to measure the impact and outcomes of the project. Both quantitative and qualitative methods were used for evaluating different project components. The evaluation found the project had a significant impact at national policy level and provided evidence for reducing child injury from the pilot interventions. The following are highlights of the evaluation:

- The greatest achievement was the integration of CIP into the National Plan of Action for Women and Children (2011-2020). In securing the government’s commitment to CIP at the State Council level, the project embedded child injury in the national agenda which presents opportunities to replicate the CIP program elsewhere in China.

- The project facilitated the development of safety-related policies and regulations in health, education, and road transport at national, provincial and local levels. A series of technical standards and best practices were developed to guide future CIP programs.

- UNICEF and its partners tested both urban and rural implementation strategies in two community-based pilot projects covering approximately 170,000 people. A multi-sectoral collaboration mechanism was developed to address child injury through implementation models of safe school, safe kindergarten, safe home and safe community.

- Surveillance data showed that serious child injury is more prevalent in rural areas. Caretakers of children in rural areas are less educated and generally lack injury prevention knowledge and resources to provide adequate supervision and safe environments. The situation is exacerbated by the large number of "children left behind" whose grandparent caretakers are often illiterate.

- Communication and education programs led to improved awareness, knowledge, skills in parents and caretakers to prevent injury from road traffic, falls, drowning, animal bites, poison and other types of injury. Child participation was a focus of activities in the safe school program to change behaviors and develop safety skills.
The project developed standards for “Child Safe Home”, “Safe Schools”, “Safe Kindergartens” and “Safe Communities” to identify and remove injury hazards from homes, schools and communities. These interventions focused on separating children from physical hazards in their daily environments, to reduce the risk of drowning, road traffic accidents, falls, burns/scald, poison and animal injuries. The safer physical environment, coupled with behavioral change in parents and children contributed to an overall reduction in child injury.

Child injury incidence decreased over the life of the project. Specific examples are:

In Jiangxi, for children under 6, injury incidence decreased from 15.5% in 2007 to 7.1% in 2009 (p <0.01). Fatal injury fell from 7 deaths in 2006 to 2 deaths in 2009. For children 7-17, injury incidence fell from 2.6% in 2008 to 1.8% in 2009 (p <0.01).

In Beijing, for children under 6, injury incidence decreased from 2.8% in 2006 to 1% in 2009. For school-aged children, non-fatal unintentional injury incidence decreased from 0.9% in 2005 to 0.8% in 2009. The 45% reduction in road traffic injury incidence from 2005 to 2009 was particularly notable given the number of motor vehicles registered increased 60% in the same period.

The likelihood of sustainability is increased by the extensive government buy-in as well as the newly developed injury prevention capacity of local government staff and partners from multiple sectors.

Along with successful experiences, there were challenges and lessons from the project. Two lessons were paramount: the need for government buy-in and multi-sector collaboration. The major challenges were two in number as well: creating a system of clear accountability among individual sectors and establishing a permanent line in the public sector budget.

CIP is greatly under-funded, especially at local government level. To maintain the momentum created by the success of this project, the Government of China should increase the priority for CIP in its development agenda. In particular, more resources are required to expand capacity to prevent drowning, the leading cause of injury mortality, and falls, the leading cause of injury morbidity. Removing drowning and fall hazards and teaching child to swim are effective interventions which require substantial investment.

The evaluation found that UNICEF should continue to advocate on the need to scale up CIP based on the success of the project. Fund raising should focus on CIP in the context of eliminating disparity, and ensuring a child’s right to survival, development and protection.
1. Background

Injury is the leading cause of death for children after their first birthday. Globally, injury kills approximately 950,000 children and young people under the age of 20 years each year (WHO global burden of disease 2004 update). According to the World Report on Child Injury (WHO/UNICEF 2008), more than 2,000 children die every day as a result of unintentional or accidental injuries.

Injury is also a leading cause of death for children 1-18 years old in China. This is due to the success of China in reducing child deaths caused by infectious and nutritional causes. Every year, more than 100,000 children die due to various types of injury, almost 1% of the global burden of child deaths. Among children younger than five, death by injury has become more prominent in China, especially in more developed urban areas where the infant mortality rate (IMR) and under-five mortality rate (U5MR) are almost as low as in developed countries.

Injury deaths are only the tip of the iceberg. Non-fatal injury, especially permanent disability, imposes significant social burdens on families and results in a large economic burden to society at large.

Following 30 years of economic growth, China has progressed to the stage where addressing child injury is necessary to protect Chinese children’s right to survive and enjoy safe and healthy development. While continuing efforts are needed on reduction of neonatal and infant mortality in rural areas, the government of China is now seeking other effective approaches to reducing child mortality in both urban and rural areas.

In response to this epidemiologic transition, UNICEF has supported child injury prevention (CIP) activities in China since 2003. Two large community-based injury surveys were conducted in municipal Beijing and in Jiangxi province. These surveys were modelled on the standard UNICEF/ The Alliance for Safe Children (TASC) injury surveys conducted in five other South and East Asian countries, and provided evidence that injury predominates as the leading cause of death after infancy, and is the leading cause of permanent disability.

A CIP project was placed under the Health and Nutrition Programme in the 2006-2010 Country Programme cycle, the first project with this focus in the 30-year history of UNICEF China. In partnership with the Ministry of Health (MoH) and National and local Working Committees for Children and Women (NWCCW and local WCCWs), the CIP project engaged a wide range of stakeholders from local government authorities, All China Women’s Federation (ACWF), health, education, public security, traffic police, and media sectors.
The Project has had three main components: (1) national policy making, (2) surveillance and data analysis and (3) local interventions and research. This document reports on an evaluation of these three project components, conducted in 2010.

2. Objectives of the evaluation

To evaluate the impact and outcome of the project in terms of:

1. Developing national policies, guidelines and local rules and regulations on CIP.
2. Establishing demonstration projects to test the feasibility of a comprehensive safe school, safe home, and safe community injury prevention model
3. Developing a functional multi-sectoral collaboration mechanism at the pilot sites
4. Building the capacity of CIP for government counterparts and the community at large, for sustainable development
5. Improving safety knowledge and behaviour among parents and children
6. Reducing child injury mortality and morbidity in the pilot areas
7. Developing a school and community-based child injury surveillance system

3. Methodology

Both quantitative and qualitative methods were used for evaluating different components of the project. These included document and record review, interviews with project managers from various sectors, field observations, small scale KAP surveys among students and teachers; and analyses of school and community based surveillance data collected over the period 2005-2009.

Evaluation of the Safe Beijing pilot project and its impact on national policy was carried out by a group of injury prevention experts from the Beijing Centre for Disease Control (CDC), Beijing Education Research Institute, and Beijing Institute for Maternal and Child Health (MCH). This team designed the study instruments, conducted quantitative and qualitative surveys, and analysed the data.

Representatives from the health, education, public security, and mass communication (propaganda) sectors of the Beijing Municipal Government and 31 community committees were surveyed and interviewed.

Funding was not available for a large scale end line survey that covered the entire target population, so data from school- and community-based injury surveillance was
used to demonstrate changes in injury incidence.

Knowledge and behaviour change were measured by pre- and post tests conducted among 20,000 students who learned from the safety curriculum (“Little Safety Guard”) supplemented by a small scale KAP survey among school students and their parents.

Evaluation of the Jiangxi pilot project was conducted by the Jiangxi Provincial Institute of Chronic Disease. Quantitative methods such as household interviews before and after the intervention, and analysis of school- and community-based injury surveillance were used to measure change in child caregivers’ injury knowledge, attitude and behaviour, and child injury morbidity and mortality.

Document and record review was used to assess local policy and regulation change. Individual / focus group interviews were conducted to assess capacity-building among the project management personnel, establishment of multi-sectoral collaboration mechanisms and introduction of relevant policies. Field visits were also conducted to observe environment modifications in households with children younger than 6, communities and schools. Quality control procedures included: interviewer certification after training, on site supervision, re-interviewing 5% of the respondents, and double data entry data. SPSS 12.0 was used for statistical analysis.

The author of this English report reviewed the evaluation framework and the Chinese language reports, discussed with the evaluation teams and synthesized key components from the two Chinese language evaluation reports provided by the group of injury prevention experts in Beijing and the Jiangxi Provincial Institute of Chronic Disease.

The definition of injury used in the report was: Damage to a person caused by an acute transfer of energy or by sudden absence of heat (hypothermia or oxygen (asphyxiation, drowning). Forms of energy are mechanical (kinetic), thermal, chemical, electrical and radiation. Intentional injures are injuries that are purposefully inflicted, either by the victims themselves (suicide or suicide attempts), or by other persons (homicide and violence). Unintentional injures are classified by the environment causes included drowning, transport (in this report only road traffic accident RTA, was counted), falls, burns/scalds, cuts, poisons, suffocation, electrocution, injury from blunt object, falling objects and animals.

The criteria of injury morbidity for inclusion in the project was an injury incident that caused a child to seek medical care, or caused him/her to miss one day or more of school or kindergarten. For children of preschool age, the minimum criterion for inclusion was an injury event of sufficient magnitude to prevent being able to perform activities of daily life (ADL) such as eating, bathing, and moving.
4. Project Components and Results

4.1. Advocacy and national policy making

UNICEF and the government counterpart prioritized advocacy and policy development as an important component of the project. The goal was to advocate to the government at the highest level to develop national CIP policies and guidelines and eventually lead to the development of a National Plan of Action on CIP.

Over 5 years, the UNICEF CIP project made significant progress in this area. It secured high level commitment amongst key government agencies. As the result of UNICEF’s advocacy, technical and financial support, the government has integrated CIP into:

- The NPA for Women and Children (2011-2020)
- The MoH’s Mother-Baby Package for MCH that reaches pregnant women and new parents with safety messages and eventually should mainstream injury prevention into the national MCH program
- The Ministry of Education (MoE) national guidelines for school safety and the State Council’s circular to reinforce this guideline nationwide.
- The standard criteria for a Healthy City certified by the National Patriotic Health Campaign Committee Office (NPHCCO)
- The National Injury Prevention Framework
- The MoH’s technical guidelines on injury prevention, and
- Beijing Plan of Action for School Health and Disease Prevention (2011-2016)

Additionally, UNICEF assisted the government in building technical capacity of national, provincial and local level staff on CIP and formed a wide range of relevant alliances through implementing the project. These included government agencies such as the WCCWs at each level, the MoH, the MoE, the Ministry of Public Security, China CDC and international partners including WHO, the World Bank and TASC.

The experience gained from the project has also been introduced abroad. For example, the results of the Beijing and Jiangxi injury surveys were cited in the World Report on Child Injury jointly published by WHO and UNICEF in 2008. Representatives of the project also spoke at the international scientific conference on Injury Prevention and Safe Community Development in Vietnam in 2006 and the international safe community annual meeting in South Korea in 2010.
4.2. Local pilot interventions

The pilot interventions have been the largest and, over time, the most influential of UNICEF China’s CIP activities. The purpose of the pilot project was to create a national demonstration program to show reducing child injury mortality and morbidity in homes, at schools and within the community is feasible. Two sites were selected for the pilot intervention programs: one in Beijing and the other in Jiangxi province.

4.2.1. Safe Beijing Project

After the 2003 Beijing injury survey, Beijing was chosen as a UNICEF CIP Project site due to its proximity to central government and its strong management capacity. The goal of the project was to demonstrate that reducing child injury in homes, at schools and within communities is feasible and can be replicated.

The pilot districts were Haidian, a highly developed and wealthy urban district, and Pinggu, a poor, underdeveloped and rural district. These were specifically chosen to represent the spectrum of development in Beijing, and to some extent the rest of the country. The two have different home, school and community environments, and consequently, different patterns of child injury mortality and morbidity.

The project design was based on international best practice and experience from other UNICEF CIP programs in Vietnam and Bangladesh. The current social and economic development of Beijing was taken into consideration when adapting experience from other countries.

The project’s objectives established at the outset:

1. To create an intervention model that demonstrates the prevention effectiveness with the aim of expanding the program to other parts of the Beijing
2. To create an awareness of safety that leads to a change in attitudes of children, parents/caretakers, as well as of local and national level leaders on safety and injury prevention.
3. To modify behaviors of the above groups in an effort to reduce death and disability in children and their parents due to injury.
4. To modify the physical environment that predispose to injuries and to deploy needed safety devices that protect children and their parents from being injured.
5. To influence policy on issues related to safety and to foster an appropriate regulatory, legal and administrative environment designed to promote safety and decrease injury.
Early in the project, the decision was made to focus on child injury exclusively to maximize the utilization of relatively scarce resources. The evaluation found the project achieved the four objectives related to children, and because of the decision to focus on children, did not achieve the part of objective three, relating to parents.

The evaluation highlights the following achievements:

4.2.1.1. Established a functional multi-sector collaboration mechanism

The prevention of child injury requires a broad, multi-sectoral approach, coordinated by a strong central agency. The Beijing Working Committee for Children and Women (BWCCW) played this role in the Beijing CIP pilot, coordinating over 20 municipal government departments such as health, education, public security, traffic police, fire police, civil welfare, and urban planning among its membership.

With the BWCCW, the project established a first-ever mechanism of multi-sectoral collaboration for CIP in China. Each participating agency integrated CIP into the routine work of its own respective sector. The BWCCW project managers developed specific project indicators that related to their work performance to ensure interventions were conducted according to the work plan. They developed and implemented a total of 9 municipal and district level policies and guidelines, and 207 local safety rules and regulations were developed and enforced at home, schools, kindergartens, and in communities.

The municipal government and the project community also contributed financial and human resources to the project. Approximately 500,000RMB were allocated to the project to match funding from UNICEF. About 1,460 government personnel at various administrative levels, schools, kindergartens, and technical agencies contributed their staff time over the last 5 years. Inspired by the project, education, the Beijing public security, road traffic police, animal management and control departments have all invested their own resource for CIP beyond the geographic boundary of the project in 2007.

To ensure coordinated implementation, a project management system was put in place at the beginning. It coordinated 132 participating agencies. This included annual work plans, quarterly inter-agency coordination meetings, a project newsletter, field monitoring, feedback, and a mid-term evaluation. Most (86%) of participating agencies established a taskforce specific for CIP led by the head of the agency.

Another major component of the project was capacity building. During the course of the project, over 600 trainings sessions were conducted for project managers at various levels in theory and best practices of injury prevention, multi-sector coordination and project management. CIP has been integrated into the annual work plans of
government agencies at various levels in the project communities. This is intended to sustain project interventions in the future.

4.2.1.2. Introduced a comprehensive intervention package

The project target population was children aged 0 to 18 years. Interventions were designed to fit their development stage and to be delivered in places where they lived, studied and played.

Safe schools and safe kindergartens

Safety in schools and kindergartens was one of the main components of this project. Almost all children attended schools or kindergartens in the pilot areas. These were chosen as appropriate venues to conduct safety education. The main goal was to provide children with safety knowledge, skills and motivation to protect themselves in hazardous environments in their daily lives and during emergencies. Forty primary and secondary schools and 26 kindergartens located within the project districts participated.

Interventions were designed not only to work with principals, teachers and students to establish safe schools, but also to use children as agents of change to influence their parents and their communities.

- Intervention organization, mechanism and regulation

Under the leadership of school principals, all participating schools established injury prevention committees that integrated project activities into their routine work. Each department assumed their specific responsibility in areas of teaching, facility, campus security and student activity. Principals and teachers signed contracts with the schools to ensure the safety of the students in the classroom, playground, and laboratory and during field trips. Project kindergartens applied a similar management structure to plan and implement safety activities.

A total of 98 safety related rules and regulations were developed and enforced relating to management and coordination, education, hazard audit, crowd control, safety patrol emergency evacuation, etc.

- Conduct safety audits and remove hazards

A “Safe school checklist” was developed to identify injury risks on campus, in surrounding areas to facilitate removal of hazards from school premises. Both teachers and students participated in the safety audit. After hazards were identified, safety measures such as stair rails, rubber mats in playground, speed bumps, pedestrian crossing signals and other environmental modifications were made to prevent falls, road traffic accidents (RTAs) and other high frequency injuries. School authorities also
updated fire extinguishers, emergency exits, escape paths from high rise buildings and stock piles for emergencies.

After several rounds of pre-testing, revision and adjustment, a “Safe School Standard” was finalized and published in the technical guide of CIP. This standard will be integrated into the future Beijing Plan of Action for School Health and Disease prevention (2011-2016).

- **Safety curriculum --- “Little Safety Guard”**

The “Little Safety Guard” safety curriculum aimed to teach students safety knowledge and skills, and to change their behaviour. It targeted prevention of eight types of common injury among primary school age students: traffic injury, burns and scalds, poisoning, falls, drowning, animal bites and injury by sharp objects. Age specific lessons and activities were designed for each grade of children. The intervention designs were based on the injury epidemiology in the different age groups. Students were also trained on drowning prevention before the summer holidays and on prevention of injury by fireworks during the winter vacation.

Child participation was central to the curriculum. Children played roles as “Little detective”, “Safety reporter” and “Safety promoter” according to age group, and acted as change agents in their communities. Following each specific lesson, the students gained knowledge and skills in risk identification and injury prevention. Home work assignments, individual and class projects coupled to the safety lessons involved the student’s family and community at large in an attempt to provide a safer environment that included the home and community. Teachers developed teaching aids and interactive modules for the curriculum. A feedback mechanism was built into the lesson plan to allow parental involvement.

More than 20,000 students in 40 primary schools were taught using this curriculum. Tests administered before and after participation in the class and home assignments showed students gained specific knowledge on preventing road traffic injury and burns, and practical skills to protect against harm during the injury event increased. While a soft indicator, students reported increased practice of safe behaviour after they were taught the curriculum.
Table 1 Changes in Knowledge, Skills and Reported Behaviours among Students

<table>
<thead>
<tr>
<th>Answer and reported behaviour</th>
<th>Pre-test (%)</th>
<th>Post test (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not use seatbelt in cars</td>
<td>47.4</td>
<td>24</td>
</tr>
<tr>
<td>Do not use zigzag when crossing road</td>
<td>20</td>
<td>7.9</td>
</tr>
<tr>
<td>Do not know the signals at crossing</td>
<td>14.8</td>
<td>3.3</td>
</tr>
<tr>
<td>Measures to take when clothes catch fire</td>
<td>17.3</td>
<td>41.8</td>
</tr>
<tr>
<td>Locate emergency exit in public places</td>
<td>76.5</td>
<td>95.1</td>
</tr>
<tr>
<td>Waiting for bus on the road</td>
<td>32.8</td>
<td>7.8</td>
</tr>
<tr>
<td>First aids skills (cut, etc)</td>
<td>28.9</td>
<td>46.4</td>
</tr>
<tr>
<td>Report to parents/teachers immediately after being bitten by pet</td>
<td>38</td>
<td>66.4</td>
</tr>
<tr>
<td>Play in the parking lot and on the street after school</td>
<td>14.2</td>
<td>2.2</td>
</tr>
</tbody>
</table>

There were large differences between urban and rural students in terms of knowledge and behaviour to prevent animal bites. For example, urban students reported that their family pet was immunized increased from 63.4% at the baseline to 94%, whereas there was no change reported by rural students. The high rate of immunization in urban area also was likely due to enforcement of the Municipal Department of Pet Management, which participated in the project. It is mainly active in urban areas.

Parents were involved in the learning process and their safety-related knowledge and behaviour also improved. For example, the rates of safe storage of medicines and chemicals/pesticides (stored out of reach of children) were 49.7% and 35.8% at the beginning and increased to 70.4% and 71.6% at the end of the project.

In the project kindergartens, children 3-6 years old were safety knowledge and skills according to their cognitive and physical development stages. Parents were actively involved and provided frequent feedback, by using the “Child Safe Home Checklist” and attending PTA meetings. Kindergartens used a variety of communication channels such as print media, TV, and internet to reach parents and children themselves.
Child participation was central in the project

Students were used as change agents in identifying injury hazards and building a safe environment for themselves. Over 20,000 students participated in activities for traffic safety, playground safety, fire safety, emergency drills during natural disasters and first aid. A Safe Olympic Games was also a theme for child participation during the time of 2008 Beijing Olympics.

Safety knowledge and best practices were disseminated through school radio and TV networks, bulletin boards, mobile exhibits and student competitions. Almost half (43%) of the communication materials were designed and produced by students themselves. The project logo was selected from student design competition.

Project activities were designed to influence planners at MOE and in the Beijing Municipal Bureau of Education. They participated in study tours, conferences and other forms of experience sharing. Many schools located outside of project area expressed their willingness to participate in the program voluntarily.

In 2008, the safety curriculum -- “Little Safety Guard” received a pedagogical award from the Beijing Municipal Government. The Beijing Municipal Bureau of Education has expressed an intention to integrate the curricula into the core curricula for all schools in Beijing. However, this has not been implemented as of this report.

Safe home and safe community

Two urban communities in Haidian District and 3 rural villages in Pinggu District participated in the pilot project; approximately 35,000 households with 100,000 residents benefited.

Multi-sectoral coordinating mechanism established

Multi-sectoral coordinating committees were established in every project community. Members of these committees include the community administrator, ACWF, social welfare, police, community health workers, early childhood educators, representatives from families and children themselves. The committee took the lead to plan and
implement safe community activities according to their own perceived injury risk. A series of inter-agency communications was developed to ensure interventions were conducted in a coordinated fashion. Project staff was trained in injury prevention principals and best practices, management skills and communication skills.

- **Community mobilization and child participation were major foci of the project**

Community members were mobilized to conduct a monthly safety audit. Injury hazards were announced through the community bulletin. Community members took part in removing environment hazards. For environment hazards beyond the ability of community members to modify, the community safety committee requested public security, fire police, health, township and the city administrative office and other government departments to take action. Private sector agencies such as property management companies located in the project communities also contributed resource to the community. Community members also participated in emergency drills for fire, earthquake, flood, electric shock, poisoning and RTA.

As part of the Safe school – safe community feedback loop, students brought safety knowledge and skills they learned from schools to their parents, other care takers and their communities. They participated in community hazard mapping and worked with adults to remove the hazards. Students and retirees were also mobilized for safety patrols during summer and winter vacation and during the holiday season.

- **Parents and other care takers training**

Parents, grandparents and other care takers were trained to raise their safety awareness and improve child supervision. They were trained to administer first aid at home.

The project designed a pictorial “child-safe home” check list and a “Safe home model display” for parents and grandparents to conduct a home safety audit and modify their homes to reduce injury risk.

The project also promoted the use of safety devices such as covers for sharp edges of furniture and electric plugs, stair gates, balcony guards, baby car-seats and many other safety devices for families with children younger than six.

- **Communication through local media and promotional events**

A variety of media (TV, internet, newspaper, community radio, community bulletin, brochures and posters, mobile phone text message) were also used to reach parents, care-takers and children themselves with messages designed to raise their safety awareness and
injury prevention knowledge and skills. Over half of the communication materials were designed by community multi-sectoral coordinating committees based on their local injury risk, underscoring the community ownership of the project.

These communication activities used entertainments as a vehicle to deliver educational messages, to demonstrate best practice and desired safety behaviours to parents, caregivers and children. They were also used to generate interest in solemn topics such as injury death and disability, through interaction with the audience.

Safety promotional events, such as national fire prevention day, competitions for safety quiz and home safety tips, and variety shows were held frequently in the project communities. The project also used the 2008 Beijing Summer Olympics to promote the theme of “Safe Community”.

4.2.1.3. School and community-based injury surveillance

At the beginning of the project, school and community-based injury surveillance systems were established in both Beijing and Jiangxi projects. Different from the hospital emergency room injury surveillance, this was designed to collect child injury data in locations where children study and live. Both surveillance systems were built on the platform of government routine health information systems to make them more cost effective and sustainable.

The primary purpose of the surveillance was to provide feedback to guide project implementation. A secondary purpose was to test the feasibility of integrating injury surveillance into the existing school absence recording system and primary health care services, for children under six.

Due to a lack of funding for a large scale cross sectional survey at the end of the project, results from these two surveillance systems were used as the best available data sources for the project evaluation. Data from the first year and last year surveillance was used to demonstrate changes in injury morbidity from 2005 to 2009.

- School-based injury surveillance system

In Beijing, 50 primary and secondary schools with over 20,000 students participated in the school injury surveillance system. The system used routine school attendance records to screen for injury cases among students. School nurses conducted follow up interviews with students and/or parents of grades 1 and 2 to collect detailed information on injury incidents and related risk factors. School nurses and teachers from 50 schools were trained in recording and reporting injury cases and compiled and submitted records to Beijing CDC every month. The result was also provided to school authorities for adjusting their interventions.
Fatal injuries and injuries during academic years were captured in the system. However, injury incidents that occurred during summer and winter vacations were not recorded as the system only recorded student absence from class. While this presented a theoretical issue, in practice it was not found to be an issue.

In Jiangxi, a similar school-based surveillance method was used to monitor student injury mortality and morbidity, although the duration of implementation was shorter than in Beijing.


Over the 5 years, 99,796 person/academic year (9months/calendar year) were covered by the surveillance system. A total of 893 injury incidents were recorded with a total injury morbidity rate of 0.90% in 2005; the majority were unintentional injury (859 cases). The surveillance data showed a decrease in the unintentional injury morbidity rate 0.9% (CI 0.73-1.0) in 2005 to 0.8% (CI 0.70-0.96) in 2009 that was not statistically significant.

Figure 1: Students Unintentional Injury Incidence Rate (%) by Area (2005—2009)

The four most frequent injury types were RTA, falls, cuts by a sharp object and animal bites. The remaining injury types were recorded at low rates.

The change in RTA incidence was greatest, with a 45% reduction from 2005 to 2009. This is notable as the number of motor vehicles registered in Beijing increased 60% over the same period.
Another change noted was the decline in animal bites in the urban area. In contrast, animal bites among rural students decrease during the first 2 years but rebounded since 2008. This is consistent with low knowledge change at the end of the project regards animal bites in rural area.

**Figure 3  Animal Bites Incident Rate among Rural and Urban Students**

- **Community-based injury surveillance**

For pre-school children aged 0-6 years, the project introduced injury surveillance through the existing MCH system at primary health care centres and community
kindergartens. Parents reported injury incidents during their child’s routine health services at scheduled intervals for immunization and growth monitoring. For children aged 4-6 years, kindergarten nurses registered injury incidents via the same absentee recording system. Since 2006, 5,051 0-2 year old and 3,717 per year 3-6 years old children have been covered by this surveillance.

Data collected during the last 4 years showed a continuous decreasing trend in injury incidence in both rural and urban project communities, from 2.8% in 2006 to 1.0% in 2009. In urban areas, injury incidence decreased from 2.7% to 0.8% whereas in rural areas the decline was from 3.1% to 1.4%. The injury incidence rate for 0—2 years old children decreased from 2.3% to 0.5% while it decreased from 3.3% to 1.8% for children attending kindergartens.

Figure 4 Injury Incidence Rate (%) among Rural and Urban 0—6 Years Old Children

Data from this system was used to guide program communities in developing their prevention strategies. For example, data showed that 56% of injury happened when children were with their parents or other care takers. The project managers acted upon this information and provided training, “child safe home” check lists and safe home module displays for parents and other caretakers to follow. In addition, surveillance data helped program managers identify injury risk factors in different settings. Data indicated that dog bites were prominent among rural children and interventions were consequently focused on measures of separating dogs from children.

Parents and other care takers were trained to modify their home environment to prevent falls. Examples of these measures were: putting infants in baby cots, moving furniture away from windows, increasing the height of balcony rails, and seven other safety measures. Kindergartens also added protective measures to playgrounds,
stairways and classrooms, to prevent children from falling. These targeted interventions contributed to the reduction of injury incidence among urban children. After 2 years of operation, this system was adopted for all kindergartens covered by the Primary Health Care service in the entire municipality.

4.2.1.4. Impact on the national policy making

The successful experience in Beijing resulted in national government policy making as well as other CIP projects in Jiangxi, Zhejiang and Jiangsu provinces (the latter two through Ministry of Health’s Healthy City programmes). Study tours and conferences were conducted to exchange experience and introduce the project model to other provinces.

The Safe Beijing model interventions and best practices provided tools for local authorities to implement government safety policy and apply the project experience nationwide. Based on the experience gained in conducting the project, a “Beijing CIP Technical Guideline” was published. This guideline laid out the CIP strategies and best practices from the project, and provided practical tools for each steps of project planning and implementation. Part of the project experience has already been written into Ministry of Health’s “National Technical Guidelines on Injury Prevention”.

In 2008, CIP was integrated into the MOH mother-baby package in its MCH Project implementation in poor rural counties, mostly in China’s western region. CIP is included in MCH-worker training at county, township and village levels, and in community and household education activities and materials.

4.2.2. Jiangxi child injury project

In 2005, UNICEF supported a province-wide injury survey in Jiangxi using the UNICEF/TASC regional survey methodology. One hundred thousand and ten households and 98,335 children were included in this survey. The survey showed that injury was the leading cause of death for children 1-17 years (69%), and caused one-third (35.1%) of all child deaths (0-17 years). Drowning was the leading cause of injury death (68%) followed by RTA (17%). Animal bites and falls were the leading non-fatal causes of injury. Following this survey, pilot community-based CIP activities began in 2007.

Three rural townships with a total population of 50,118 in Conger County were selected to participate in the pilot project. The project covered 10,531 households in 244 rural villages. 3,784 children younger than 6 years old and 7,751 primary and secondary school students benefited from the project.

The project learned from and adapted the experience of the Beijing safe school, safe home and safe community approach to this specific rural setting. Based on evidence provided by the Jiangxi Injury Survey and local surveillance, the project focused on
preventing high frequency injuries such as drowning, falls, animal bites and RTA. Children under six year of age were a prioritized as more than half of them in the project areas are children left behind (CLB) by their migrant-worker parents. They are looked after by elderly, often illiterate grandparents, thus exposed to higher risk of injury.

4.2.2.1. Established a functional multi-sector collaboration mechanism

Similar to the pilot project in Beijing, Jiangxi Provincial WCCW took the lead in advocacy and policy development, and established an indicator for reduction of child injury in their Plan of Action for Children for the next 10 years (2011-2020). This is the first provincial plan of this kind that integrated CIP in China. Once the plan is finalized the Government will allocate budget and responsibility for each relevant sector to create a sustainable mechanism for CIP in Jiangxi.

At the project county and townships, the ACWF staff, CDC, education, public security, communication and mass media and other sectors plan and implement project activities. Forty participating agencies from county to village established a project management committee involving and most (83%) of the agencies linked project objectives to their routine work performance standard, making staff accountable.

Although Jiangxi project had only three years for implementation, progress was made in the areas of advocacy, policy development, educating parents and children, and environmental change. Over 50 official circulations and more than 100 newsletters were issued to promote CIP. The project county leadership also used CIP to facilitate the achievement of a broader goal of “harmonious society”. The local government has integrated CIP into the criteria of and “New Socialist country side” and raised relevant bills at the county’s people’s congress.

Because this was the first time an injury prevention project had been conducted in this location, the project had to build capacity de novo amongst various multi-sectoral partners. Over 100 training sessions were conducted for Provincial, municipal and county organizations. Equipped with injury prevention knowledge and best practices, project staff took on community mobilization, mass communication, and removed hazards to make environment safer.

4.2.2.2. Communication for knowledge and behaviour change

Posters on preventing leading causes of injury, slogans to create general awareness, the “Child safe home checklist”, promotional shopping bags and many other formats of
communication materials were placed in project villages. Interpersonal communication was another major educational tool. Village doctors and ACWF cadres visited families with children and helped care takers to identify injury hazards and make their homes safer.

Innovative methods such as using text messages to reach parents were also used to disseminate CIP message, as mobile phone uptake is high in rural China. Project staff also conducted a social autopsy at the site of each drowning to analyse the causes of death and intervention measures to prevent repetition.

After 3 years of intervention, parents and care takers KAP on child injury improved compared with the baseline. There was a significant increase in 9 out of 12 indicators in project evaluation survey as seen in the table below:

Table 2  Parents and other caretakers KAP change before and after interventions

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Before</th>
<th>After</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Heard of child injury</td>
<td>716</td>
<td>277</td>
<td>96.9</td>
</tr>
<tr>
<td>Know carrying child while riding motorcycles is risky</td>
<td>117</td>
<td>13</td>
<td>4.55</td>
</tr>
<tr>
<td>Children playing by the pond alone is risky</td>
<td>2667</td>
<td>263</td>
<td>92.0</td>
</tr>
<tr>
<td>Children playing with dog alone is risky</td>
<td>75</td>
<td>9</td>
<td>3.2</td>
</tr>
<tr>
<td>Infant should sleep in a separate bed</td>
<td>116</td>
<td>181</td>
<td>63.3</td>
</tr>
<tr>
<td>Children younger than 2 should not eat nuts/jelly</td>
<td>1616</td>
<td>265</td>
<td>92.7</td>
</tr>
<tr>
<td>Should not feed children when they are crying</td>
<td>1305</td>
<td>212</td>
<td>74.1</td>
</tr>
<tr>
<td>Teaching children to swim can reduce drowning</td>
<td>1079</td>
<td>174</td>
<td>60.8</td>
</tr>
<tr>
<td>Children should not be left alone when you cook</td>
<td>1007</td>
<td>232</td>
<td>81.1</td>
</tr>
<tr>
<td>Should not leave children &lt;2 when they sleep</td>
<td>738</td>
<td>220</td>
<td>76.9</td>
</tr>
<tr>
<td>Should not leave infant alone when bathing them</td>
<td>2644</td>
<td>284</td>
<td>99.3</td>
</tr>
<tr>
<td>Immunize after bog bites regardless if show blood</td>
<td>2538</td>
<td>272</td>
<td>95.1</td>
</tr>
</tbody>
</table>

N= 2,918 (before intervention) N = 286 (after intervention)

All respondents had heard the injury prevention messages through various mass media such as television, posters and mobile phone text messages; 82.8% of the respondents understood the contents of newly circulated safety policies and regulations.
4.2.2.3. Remove environmental hazards to make children’s home safer

Environmental modification to remove injury hazards was a major focus. The baseline survey showed that injuries that occurred at home and in the surrounding area accounted for 50.5% and 38.3% respectively. Families with grandparents as caretakers had 61.5% more injury hazards compared with parents as caretakers, based on the child safe home check list.

After the interventions, home observations at households with children younger than 6 years showed that 10 out of 11 safe home indicators changed significantly (P <0.01). as seen in the following table. However, 20% of the caregivers for children left behind were able to gain less than 3 kinds of CIP measures.

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Before (No.)</th>
<th>Before (%)</th>
<th>After (No.)</th>
<th>After (%)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reach tools and other sharp objects easily</td>
<td>2584</td>
<td>88.6</td>
<td>57</td>
<td>18.5</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Reach medicine, pesticide/rodenticide easily</td>
<td>2048</td>
<td>70.2</td>
<td>31</td>
<td>10.1</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Reach matches/lighter and open fire easily</td>
<td>2533</td>
<td>86.8</td>
<td>49</td>
<td>15.9</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Reach electronic socket and small toys that can be swallowed easily</td>
<td>1808</td>
<td>62.0</td>
<td>14</td>
<td>4.5</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Balcony without rails</td>
<td>556/1427*</td>
<td>39.0</td>
<td>48/292*</td>
<td>16.4</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Stairs without rails</td>
<td>788/1573*</td>
<td>50.1</td>
<td>59/288*</td>
<td>20.5</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Yard gate always open</td>
<td>1991</td>
<td>68.2</td>
<td>158</td>
<td>51.3</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Large water container without lid</td>
<td>1951</td>
<td>66.9</td>
<td>148</td>
<td>48.1</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Have pet dog or cat</td>
<td>1801</td>
<td>61.7</td>
<td>191</td>
<td>62.0</td>
<td>0.92</td>
</tr>
<tr>
<td>Well without lid</td>
<td>325/1537*</td>
<td>21.2</td>
<td>31/267</td>
<td>11.6</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Open water source within 100 m of the house</td>
<td>2018</td>
<td>69.2</td>
<td>135</td>
<td>43.8</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

Because drowning is the leading cause of child injury death in the project area, communities and families modified the environment to separate children from large open water sources. The number of outdoor water sources with physical barriers increased from 29% before to 83% after the intervention, an increase of 53% (P <0.01).
In particular, fencing of ponds and ditches and at front gates increased from 4% to 55% and 6% to 56% respectively after the intervention (P <0.01). In addition, warning signs were set up at 28 reservoirs after the intervention, an increase from 10 before.

4.2.2.4. Community –based injury surveillance system

Since 2007, village doctors began to collect injury data for children under 6 years old during routine primary health service, home visit and telephone interview. Village doctors, first line health providers in rural China, played a major role in reaching parents, care-takers and children themselves with safety messages, and conducting “Child Safe Home” checks and collect injury data.

A baseline survey done at the beginning of the project showed that 5 children drowned in the village ponds and ditches and 2 died due to burns/scalds in kitchens in 2006. Over the three year period beginning January 2007 and ending December 2009, 7 fatal injuries were reported (an average of 2.3 deaths per year). All drowned in ponds, wells, and streams.

Community base injury surveillance also reported a total of 1,246 injury incidents among children 0-6 years old over the 3 year period. Injury incidence was significantly higher in male children (13.11%) than among female children (8.04%, P <0.01). There was a decrease in injury incidence over the 3 years from 15.5% in 2007 to 7.1% in 2009, a reduction of 8.4% (P <0.01).

The leading causes of injury were falls (46.8%), animal injury (16.2%), burns (11.5%) and cuts by sharp objects (9.8%). Different types of injury occurred in different age groups: children younger than 2 years old were injured by falls, animal injury, cuts by sharp objects and burns in decreasing order of frequency; whereas falls, animal injury, burns and blunt object caused injuries among 3 to 6 year olds. Almost half of injuries (45.2%) happened in the children’s living room and on the community / village roads.
4.2.2.5. Impact of the safe school program

After 3 years of safe school interventions, there was significant change in KAP among both students and teachers. Eleven out of 12 KAP indicators were changed significantly among surveyed students as seen in the table following:

**Table 4  Students KAP before and after Interventions**

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Before</th>
<th>After</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td></td>
</tr>
<tr>
<td>Heard of child injury</td>
<td>635 95.2</td>
<td>667 100</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Carrying a child while riding motorcycles is risky</td>
<td>340 51.0</td>
<td>547 82.0</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Children playing by the pond alone is risky</td>
<td>454 68.1</td>
<td>563 84.4</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Children playing with dog alone is risky</td>
<td>153 22.9</td>
<td>175 26.2</td>
<td>0.12</td>
</tr>
<tr>
<td>Infant should sleep in a separate bed</td>
<td>327 49.0</td>
<td>649 97.3</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Children younger than 2 should not eat nuts/jelly</td>
<td>509 76.3</td>
<td>664 99.6</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Should not feed children when they are crying</td>
<td>338 50.7</td>
<td>655 98.2</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Teach children swim can reduce drowning</td>
<td>435 65.2</td>
<td>661 99.1</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Children should not be left alone when you cook</td>
<td>324 48.6</td>
<td>400 60.0</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Should not leave children &lt; 2 alone when they sleep</td>
<td>497 74.5</td>
<td>656 98.4</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Should not leave infant alone when bath them</td>
<td>638 95.7</td>
<td>664 99.6</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

N = 667
On-site observation in 36 schools showed RTA prevention measures (speed bump in front of gate, zebra crossing and warning signs) rose from 5.6% before to 63.9% after the intervention, an increase of 58.3% (P <0.01). Among the 14 schools where ponds, wells and other open water sources were located inside the campuses, 13 schools had added barriers or seals to those open water sources. All schools with staircases had added railings.

Similar to the Beijing school surveillance system, project schools also used student’s absence to screen for and record injury incidence.

Three injury deaths were reported during this period among, two drowning (one male and one female student each) and one female student was struck by lightning. There was no permanent disability caused by injury reported (no baseline data available).

The total reported injury incidence rate during the 2 year period was 2.2% (3.0% in males and 1.3% in females). Surveillance data also demonstrated an overall decline of injury incidents from 2.6% in 2008 to 1.8% in 2009 (P <0.01).

**Figure 6  Students Injury Incidence Rate by Sex, Jiangxi 2008～2009**

The leading causes of injury were falls, animal bites, cuts by sharp objects and road traffic injuries. Almost 70% of injuries occurred in students’ living rooms or on the way to and from school, and 22% occurred in the school playground and the classroom.
5. Conclusions

After 5 years of implementation, the child injury project came to an end with the completion of the current UNICEF program cycle. The project brought about significant impact at national policy level and provided evidence of reducing child injury from the pilot interventions. Designed based on the internationally proved intervention strategies, the project resulted in valuable experience and lessons learnt.

5.1. National policy implications

The project has made great strides in this area in securing government commitment to put CIP into the national women and children development framework in the next 10 years. A series of technical standards and best practices were developed to guide similar programs in the future. Newly established rules, regulations and enforcement were among the most powerful tools to protect children from being injured.

5.2. Demonstrated feasibility of implementing a comprehensive CIP program

The project demonstrated that it is feasible to address child injury through a comprehensive model of safe schools, safe homes, and safe communities. Two pilot projects sites that covered approximate 170,000 people provided implementation models in both urban and rural China. A wide range of interventions were introduced based on international best practice and adapted to the local conditions. This pilot project showed what is possible in the new era of child survival and development in China.

5.3. Multi-sector collaboration mechanism ensured the success of the project

The project was successful in creating a functional multi-sector collaboration mechanism. This model has been used in HIV/AIDS prevention but this was the first time it has been applied in CIP in China. Over time, the project formed a partnership among the ACWF, health, public security, education, transportation, media and many other sectors working towards a common goal of prevent child injury. As a result, this model has been included into the National Injury Prevention Framework and the MOH’s technical guidelines on injury prevention.

5.4. Communication for behaviour change increased children and their care givers’ safety awareness, improved injury prevention knowledge and behaviour

A large amount of resources were used to develop and teach the safety curriculum, train parents and care takers, and disseminate injury prevention messages through mass media and local promotional activities. These aimed to change parents, care takers and children’s fatalistic attitude toward injury, increase their risk awareness, and provide them with knowledge and skills to protect themselves from being injured.
participation was the centrepiece of all communication activities, particularly in the safe school program. These efforts resulted in increased awareness, knowledge, and newly acquired skills to prevent RTA, falls, drowning, animal bites, poisoning and many other types of injury.

5.5. Identification and removal of injury hazards at home, schools and in the community prove to be effective

The project managers recognized that education alone cannot prevent child injuries. They adopted the “3E” (education, environment modification and enforcement of laws) approach of injury prevention to encourage parents and caregivers to remove injury hazards from home and communities. These environment modifications were adapted to the cultural context and conform to the local conditions.

The project developed standards for “Child Safe Home” “Safe Schools” “Safe kindergartens” and “Safe community” that aim to separate children from environmental hazards in place where they live, play and study. Over the life of the project, many changes were made to separate children from hazards related to drowning, falls, cuts, burns/scalds, poisoning, animal bites and RTA. This was particularly useful in rural Jiangxi for young children and care takers with low literacy rates for whom active behaviour change may be unrealistic. Once implemented, these passive measures do not require repeated behaviour change from the individual or family.

5.6. Reduction of child injury mortality and morbidity in the pilot areas

The evaluation provided evidence of reduction of child injury incidence over the life of the project:

Jiangxi surveillance data demonstrated an overall decline in injury incidence among all ages of students from 2.6% in 2008 to 1.8% in 2009 (P <0.01). For 0-6 years old children, injury incidence was reduced from 15.5% in 2007 to 7.1% in 2009, a reduction of 8.4% (P <0.01). Deaths caused by injury decreased from 7 at the baseline (2006) to 2 in 2009 (a total of 7 fatal injuries were reported in 3 years).

In Beijing, community based surveillance for children younger than 6 years old showed a decreasing incidence of injury in both rural and urban project communities from 2.8% in 2006 to 1.0% in 2009. For school age children, the unintentional injury morbidity rate fell from 0.9% in 2005 to 0.8% in 2009. It was notable that the RTA injury incidence declined 45% from 2005 to 2009 given the number of motor vehicle registration increased 60% in the same period.
5.7. Sustainable development and potential for replication elsewhere in China

One of the most significant achievements of this project has been the integration CIP into the existing Government development framework: the National (and the Beijing) Plans of Action for Women and Children (2011-2020). In China, for an initiative to proceed, the government has to adopt it into their development framework along with relevant technical standard. Government ownership guarantees sustainability and further expands the influence beyond any pilot location.

Over the past 5 years, the pilot projects tested strategies and modules suitable to both urban and rural China. A series of practical tools and educational materials were developed to guide further expansion of the CIP program in the future. Moreover, school and community surveillance systems built into existing government health information system show the potential of what is possible using existing systems.

The project built injury prevention capacity in a large cadre of local government staff and partners from multiple sectors. This will allow further expansion of the project.

6. Challenges and Recommendations

6.1. Multi-sector collaboration

Although a great deal of progress has been made in establishing multi-sector collaboration for the project management, maintaining this mechanism in the future will require a continuation of current project activities. A lack of clear accountability for individual sectors made the collaboration difficult. This problem will be addressed once the National Plans of Action for Women and Children (2011-2020) are implemented at the different levels in the government administrative hierarchy.

6.2. Difficulty in fund raising

Child injury prevention currently is severely underfunded. Preventing child injury requires the government to step up and fund programs such as those demonstrated here, as well as new funding partners and existing donors to provide technical support and experience. This poses challenges as well as opportunities. Funding levels need to reflect the importance of injury as a major cause of death and morbidity of Chinese children. Fund raising and advocacy must focus on putting CIP into the context of eliminating urban-rural and socio-economic disparity, and the right to children’s survival, development and protection.

6.3. Child injury prevention is imperative in rural area

Surveillance data from the two pilot project showed that child injury is more prevalent in rural areas. Caregivers of children in rural areas generally lack knowledge of injury
prevention and resources to provide adequate supervision and environmental modification. The situation is exacerbated by large number of children being left behind by parents who migrate for work, and whose care takers are often illiterate grandparents. Their lack of safety consciousness, skills and poverty impose direct and frequently insurmountable challenges to the quality of supervision that children may have.

In order to address this specific challenge, the project tapped into local resources such as village committees, ACWF cadres and village doctors to carry out home visits, training and safety promotional activities. However, nearly 20% caregivers were still not able to practice more than three prevention measures after 5 years of interventions. This shows that CIP in rural areas requires a longer term program to bring about significant change.

6.4. More resources required to prevent drowning and falls

Drowning is the leading cause of injury mortality and falls are the leading cause of injury morbidity. Modifying the environment to remove drowning and fall hazards from the home, community and school has been effective in the project areas as well as in other countries. However, this often requires a large amount of resources to invest in changing buildings, playgrounds, putting fences around ponds, and putting gates on individual houses. Some of these are the responsibility of the household, some the community, and some relate to the public safety and welfare, thus needing funding from government sources. In the long run, local governments need to invest more resources to ensure safe physical environment for children.

It is particularly worth mentioning that no swimming training was conducted in rural schools due to lack of facilities. Drowning is a leading cause of death in school aged children, and training in survival swimming has been shown to be effective in preventing drowning. The lack of pools is not an insurmountable constraint. Rural schools can conduct swimming lessons in portable pools and protected open water based on experience from Bangladesh and Vietnam.

6.5. Limitation of the scope of community-based and school injury surveillance systems

Currently the school injury surveillance system is based on an absentee reporting mechanism, and thus does not record injuries occurring during summer and winter
vacations. In the future, injuries during the summer and winter vacation should also be recorded to reflect the burden of injury throughout the calendar year.

A similar limitation holds true for community based injury surveillance in the urban area. In this project, children 0-2 years old who registered with the primary health centres and 3-6 year olds who attending community kindergartens located in the pilot project areas were included in injury surveillance system. Migrant children who lived in the area but were not registered with the local health service were excluded from the surveillance. In rural Jiangxi, children older than 6 years but not yet attending school were also excluded from the monitoring.

These newly established school and injury surveillance systems are works in progress. Ideally, they should be complimented by other data sources such as hospital-based surveillance, a police accident reporting system, non-communicable disease surveillance and other household surveys in the future.