

BRIEF REPORT

Implementation of a system of surveillance of childhood injuries involved in a Safe Community program: the example of Boulogne-Billancourt (France)

M Sznajder, B Chevallier, J Yacoubovitch, P Aegerter, B Auvert

See end of article for authors' affiliations

Injury Prevention 2002;8:330-331

Correspondence to:
Dr Marc Sznajder, Service
de Santé Publique et
Information Médicale,
Hôpital Ambroise Paré
AP-HP, 9 avenue Charles
de Gaulle, 92100
Boulogne, France;
marc.sznajder@
apr.ap-hop-paris.fr

Objectives: To provide precise information about child injuries, intended to promote preventive actions, in keeping with the general pattern of a Safe Community program implemented in Boulogne-Billancourt (France) since 1997.

Methods: Information about children under 16 injured in the city of Boulogne-Billancourt and its surroundings, are extracted in a database.

Discussion: The Boulogne-Billancourt database is the first permanent and specific childhood injury surveillance system in France integrated in a "Safe Community". It may constitute an "alarm system" by allowing rapid implementation of preventive action. The final evaluation of the collected data will be performed at the end of the program (after five years).

From any viewpoint—high incidence, potential severity, allocation of resources—childhood injuries are an important public health issue. Injuries are the cause of 900 child deaths annually in France.¹ They also constitute one of the main causes of morbidity and of permanent disability.²

Since the beginning of 1980s, many information campaigns were conducted by different public departments (Ministry of Health, Treasury, Social Security). During this time the incidence of injuries fell by 80%, and a reduction in severity was also observed.³ A local approach to prevention proved to be effective in several countries such as Sweden, Canada, and the United Kingdom. Forty one local prevention programs have been named by the World Health Organization (WHO) as Safe Communities, and five more are being implemented.⁴ Assessment over a five year period of four local programs has shown a nearly 40% reduction in the incidence of injuries^{5,6} and Safe Community programs are believed to be cost effective, particularly in socially deprived areas.⁷

The surveillance of childhood injuries implemented since 1998 in Boulogne-Billancourt (department of Hauts-de-Seine, France) is in keeping with the general pattern of a Safe Community program. Risk populations and situations are targeted to preventive actions, whose effectiveness will be assessed at the end of the program. The expected percentage decrease in injuries resulting from our Safe Community program is 25% in five years. We present here a preliminary report about methodological issues.

METHODS

Study population

Boulogne-Billancourt is a city of 106 000 inhabitants in the western suburbs of Paris (France). There are 16 200 children aged between 0 and 15 (15.3% of the population). The rate of unemployment is 7.25% (compared with 9% in France as a whole).

Concept of Safe Community

"Safe Community" is a concept promoted by the WHO, which includes several criteria.⁸ A surveillance board has operated in this context in Boulogne since 1998. The board, composed of 17 multidisciplinary professionals, coordinates four committees (household, school, sport, road traffic), and initiates prevention actions.⁹

System of surveillance of childhood injuries in Boulogne-Billancourt

The system includes children under 16 living in Boulogne-Billancourt who had any type of injury occurring in that town, and requiring hospital care (with or without admission). Two main sources of local data are used: the department of pediatric emergency of the Ambroise Paré AP-HP teaching hospital and the Surgical Clinic of Boulogne-Billancourt, a private pediatric hospital, which collaborates routinely with the public hospital, and specializes in pediatric trauma. Every medical report in the pediatric emergency departments is systematically reviewed by a senior physician or a senior surgeon, and events identified as injuries are included in the surveillance system. Suspicions of child abuse were not included. Parents of injured children are telephoned within 48 hours by a hospital based investigator, with the aim of collecting precise data about the occurrence of the accident, and social conditions of the family.

A standardized questionnaire is used comprising age, gender, rank in the family; parents' occupation; geographical origin of the family; atypical parenting situation; place of injury; mechanisms of occurrence of the injury; witnesses; coding of injuries according to the *International Statistical Classification of Diseases*, 10th revision¹⁰ and the European Home and Leisure Accident Surveillance System (EHLASS)¹¹; hospitalization; school and occupational absenteeism; recurrence of injuries; sequelae and disability.

Other sources complete the data. These include data from fire brigades, traffic police registry, mobile emergency units, child benefit offices, schools, sports clubs, and inpatient data of the Ambroise Paré hospital. At this time, the main local available sources are school and police registry data. Police records indicated that 79% of childhood road traffic injuries in Boulogne were treated in local hospitals participating in the surveillance system. In 1998, the school register in Boulogne listed 341 injuries involving 7604 pupils (4.5%). Nearly half of the injured pupils were treated in hospitals, the rest in private

Abbreviations: AP-HP, Assistance Publique-Hôpitaux de Paris; EHLASS, European Home and Leisure Accident Surveillance System; WHO, World Health Organization

practice. The department of epidemiology of the AP-HP hospital provides data about children living in Boulogne admitted for trauma and poisoning in other hospitals.

Expected completeness of the surveillance system

In 1997, the completeness of the surveillance system was measured in a two week prospective survey of all pediatric emergency departments in western Paris. It was estimated that the Ambroise Paré hospital and the Surgical Clinic of Boulogne-Billancourt together treated about 80% of children living in Boulogne requiring emergency hospital care; the remaining 20% were divided among several other hospitals in Paris and the suburbs. The sensitivity of the register was estimated to be 80%, regardless of severity.

Financial means

Boulogne-Billancourt provides \$US17 000 annually to pay an investigator dedicated specifically to this study and to buy equipment (computers and software). Two hospital pediatricians (authors MS and BC) spend about three days each month managing the data.

DISCUSSION

Differences between injury databases may be related to the degree of specialization of hospitals where injured patients are managed (trauma centers, surgery departments, pediatric departments, etc). Although only visits or admissions to hospital are recorded in our database, so as to maintain a minimal level of severity, this may result in a recruitment bias. On the other hand, some severe injuries, such as extensive burns, and some sport injuries involving older children and teenagers, transported by mobile emergency units towards specialized centers, are not included in the surveillance system. Moreover, we could not use the Pediatric Risk of Mortality Score (PRISM), the only severity score validated in pediatrics, because it mainly concerns intensive care.¹²

Qualitative criteria, such as simplicity, flexibility, and acceptability are required for long term operation of any surveillance system.¹³ The registry may be modified if an item appears irrelevant or too difficult to collect. Macarthur *et al* found that proxy respondent data on childhood injury in the CHIRPP system in Canada were generally reliable.¹⁴ In our study >90% of the phone interviews with proxy respondents were carried out within 48 hours of the injury, and indicated the precise circumstances of the event, the social conditions, allowed injury typology and consequences to be checked, and yielded information on places at risk and suggestions for prevention. Only for the question about the geographical origin of the family was an answer frequently refused (30%). The disadvantages of such a procedure are that it is time consuming (average time per questionnaire 20 minutes), costly, and requires previous written agreement of the families at the emergency department.

As seen above, the estimated sensitivity of our surveillance system was about 80%. This lack of exhaustivity was expected for events with high incidence. Other local sources, excluding school and police registries, are not yet routinely included.

As in our surveillance system, an increasing incidence of rollerskate injuries was noted in the EHLASS network due to an increasing exposure to risk, and to a lack of means of protection.^{15 16} This example shows that our system may constitute an early warning and at the end of 1999 we conducted a local information campaign on this topic through several media.

The first collected data indicate some crucial points for injury prevention—geography: some city areas at particular risk were identified after adjustment for population density,

based largely on information collected by phone calls. New speed bumps have been put in place in front of schools. A complete map according to injury location is being prepared. Sociology: a significant relationship was established between recurrence of injury and social or school difficulties. Activity: household and school injuries are predominant with respect to age, time of exposure to risk, and crowded housing. As a result, a local sport injury registry is soon to be implemented. Injury: although observed injuries are generally minor, some severe injuries could have been avoided by better supervision or protection. Education in first aid is being implemented in the civics classes of senior schools. A further, final evaluation of the data will be performed at the end of the program (after five years).

ACKNOWLEDGEMENTS

We gratefully acknowledge the help of Dr Laure Comar (Surgical Clinic of Boulogne-Billancourt), Mrs Christine Bruneau, Martine Thibaud, Mouloud Cherfi, Jean-Pierre Fourcade (city of Boulogne-Billancourt), Mrs Valérie Lavrilleux (school medical services of Boulogne), and Dr J P Tresca (AP-HP). Financial support was provided by the city of Boulogne-Billancourt.

.....

Authors' affiliations

M Sznajder, Departments of Public Health and Pediatrics, Hôpital Ambroise Paré AP-HP and Faculté de Médecine Paris-Ouest, Boulogne-Billancourt, France

B Chevallier, Department of Pediatrics, Hôpital Ambroise Paré, Boulogne-Billancourt, France

J Yacoubovitch, Ministry of Health, Paris, France

P Aegerter, B Auvert, Department of Public Health, Hôpital Ambroise Paré, Boulogne-Billancourt, France

REFERENCES

- 1 **Lavaud J**, Chouakri O. Les accidents domestiques chez l'enfant. *Réanimation et Médecine d'Urgence* 1993;9:110-8.
- 2 **Yacoubovitch J**, Lelong N, Cosquer M, *et al*. Etude épidémiologique des séquences d'accidents à l'adolescence. *Arch Pédiatr* 1995;2:532-8.
- 3 **Inserm**. Causes médicales des décès. *Résultats définitifs France*. Liste simplifiée S9. Paris: Inserm/SC 8, 1999.
- 4 **Sundström M**, Svanström L. *Criteria for the Safe Community network*. Stockholm: WHO Collaborating Center Karolinska Institute, 1996.
- 5 **Svanström L**, Ekman R, Shelp L, *et al*. The Lidköping accident prevention program community approach to preventing childhood injuries in Sweden. *Inj Prev* 1995;1:169-72.
- 6 **Douglas MR**, Mallonee S, Istre GR. Comparison of community based smoke detector distribution methods in an urban community. *Inj Prev* 1998;4:28-32.
- 7 **Miller TR**, Levy DT. Cost-outcome analysis in injury prevention and control. Eighty-four recent estimates for the United States. *Med Care* 2000;38:562-82.
- 8 **World Health Organization**. Manifest for Safe Communities. *Proceedings of the 1st World Conference on Accident and Injury Prevention*. Stockholm, Geneva: WHO, 1989.
- 9 **Chevallier B**, Bruneau C, Leroux G, *et al*. Approche communautaire de la prévention des accidents de l'enfant. Concept et application pratique: le programme de la ville de Boulogne-Billancourt 1998-2002. *Ann Pédiatr (Paris)* 1999;46:330-6.
- 10 **World Health Organization**. *International statistical classification of diseases and related health problems*. 10th Revision. Geneva: WHO, 1993.
- 11 **Lebrun E**, Pocquet K, Duval C. Le système EHLASS. Bilan de 10 ans de fonctionnement, juillet 1986-juillet 1996. *Ann Pédiatr (Paris)* 1999;46:368-76.
- 12 **Castello FV**, Cassano A, Gregory P, *et al*. The pediatric risk of mortality (PRISM) score and injury severity score (ISS) for predicting resource utilization and outcome of intensive care in pediatric trauma. *Crit Care Med* 1999;27:985-8.
- 13 **Macarthur C**, Pless IB. Evaluation of the quality of an injury surveillance system. *Am J Epidemiol* 1999;149:586-92.
- 14 **Macarthur C**, Dougherty G, Pless IB. Reliability and validity of proxy respondent information about childhood injury: an assessment of a Canadian surveillance system. *Am J Epidemiol* 1997;145:834-41.
- 15 **Lespine A**, Derovich M, Maiello E. Les accidents de rollers. *Journal de Traumatologie du Sport* 1999;16:32-8.
- 16 **Lohmann M**, Petersen AO, Pedersen OD. Skateboard and rollerskate injuries. *Ugeskr Laeger* 1990;152:1591-3.