

# Adolescents - injury risks and prevention evidence

## Purpose

Injury is a major cause of death and disability among adolescents and is the number one killer in this age group.

In life of adolescents new and exciting risks are emerging through the initiating in active participation in motor vehicle traffic and in the work-place. As a consequence, injury rates increase significantly between the age of 15 and 24.

This makes young people the number one target group for all public health based injury prevention, a fact that is already reflected in the European Union (EU) Council Recommendation on the prevention of injury and the promotion of safety.<sup>1</sup>

As repeatedly underlined in these European policy statements, the health sector has much to offer in response to injury prevention among adolescents, by coordinating a multi-sectoral action in the context of a public health approach.

The purpose of this policy briefing is to highlight the burden of injuries among young people and to provide evidence as to good practices in preventing these injuries.

## Key messages in this policy briefing are:

- Injury is the leading cause of death among adolescents (64% of all deaths among adolescents)
- Road injuries (48%) and suicides (20%) combined account for two third of all fatal injuries among adolescents.
- Non-fatal injury rates are highest in young people - as compared to other age groups - in virtually all settings, particularly on roads, in sports, at the workplace and in violence related injuries. In particular youth violence is perceived as a growing problem in many European countries.
- The main determinant for both unintentional and intentional injuries among young people is their risk-taking behaviour, in particular in young males. Alcohol use is a significant contributing factor in adolescent risk-taking.
- Examples of effective actions for reducing injury risks for young people have been identified in diverse settings such as: graduated driver licensing for novice drivers, life skill development programmes to fight drug and alcohol abuse, mandatory use of protective equipment in organized sports and school- based violence prevention interventions.
- Also risk competency training schemes can significantly increase young people's competencies and skills in coping with risks in everyday.
- The role of the health sector is to amplify safety efforts through its advocacy, education and research activities.
- Data from the EU Injury Data Base (IDB) contributes to a better understanding of the causes and circumstances injuries. Therefore, the EU-wide implementation and use of emergency department based injury surveillance system is strongly recommended in view of increasing the effectiveness of prevention policies.

## Definitions

An injury is usually defined by intention. The main causes of unintentional (accidental) injuries are motor vehicle accidents, poisoning, drowning, falls and burns. Intentional injuries (or violence) can be divided into the categories of: self-directed (as in suicide or self harm), interpersonal (child, partner, elder, acquaintance, stranger) or collective (in war and by gangs), and other intentional injuries (including deaths due to legal intervention). In addition to intention and cause, injuries can also be addressed according to their settings – such as the home, sports and leisure, workplace or road.

Risk-taking may be defined as voluntary exposure to risk and danger, which is always a trade-off between short-term gains and potential long-term adverse consequences. Examples of risk-taking behaviours are drinking and driving, binge drinking, self-harm, violent behaviour, unsafe sex, cannabis use, and engaging in risky sports, i.e. behaviours associated with a risk of physical harm.



# 13

# Policy briefing

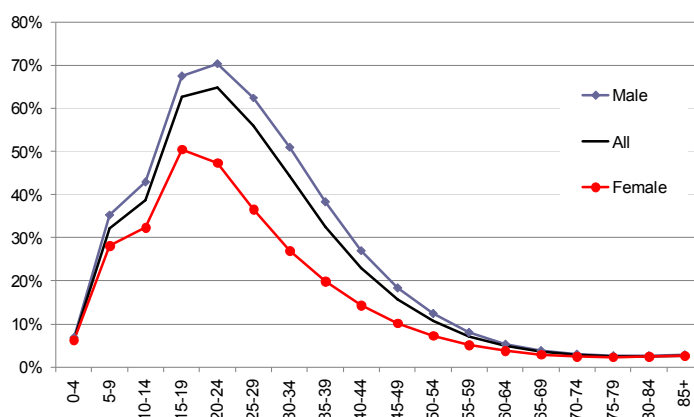


## Key facts

### *Injury is the leading cause of death among adolescents <sup>2</sup>:*

- Annually, the lives of more than 20 000 young people between 15 and 24 years of age are wiped out by injuries.
- These dramatic statistics make injury the leading cause of death among adolescents, accounting for 64% of all deaths in this age group (relative injury mortality).
- The risk of a fatal injury increases sharply after the age of 14 (Figure 1), especially for boys, and leads to a relative injury mortality rate of 70% in males between 20 to 24 years of age.
- As a result, 75% of all fatal injuries in the age group of 15-24 years relate to males.

**Figure 1 Relative injury mortality in the EU27 (Percentage of injury deaths from all deaths)**

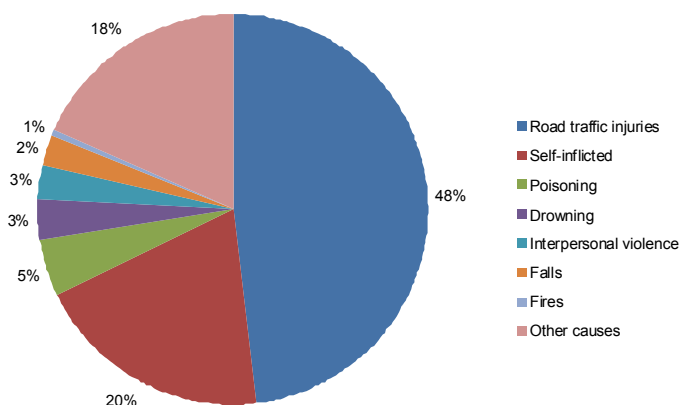


Source: EUROSTAT 3 years average (2004-2006). Data presentation: Kuratorium für Verkehrssicherheit (KfV), 2009

### *Road injuries are the leading cause of injuries among adolescents <sup>2</sup>:*

- Road injuries account for almost 50% of all fatal injuries among adolescents (Figure 2). The fatal road injury rates per 100 000 adolescents are approximately 4 times higher for boys than for girls.
- For most of the young people, traffic deaths (80%) are due to car or motorised two-wheeler related injuries, whereas cycle and pedestrian deaths account for the remaining one fifth of all traffic deaths. Traffic accidents involving young people are more common in evenings and during weekends. Lack of experience in road traffic, over-confidence in newly learnt skills, speeding and neglect of using safety belts are known risk factors.
- Also in non-fatal road injuries young people are involved beyond the overall average by a factor of 2 (for both sexes).
- By mode of transport the ranking of non-fatal road injuries in this age group is 4-wheeled motor vehicle (34%), pedal cycle (30%), and 2-wheeled motor vehicle (26%).

**Figure 2 Causes of fatal injuries in adolescents between 15–24 years**





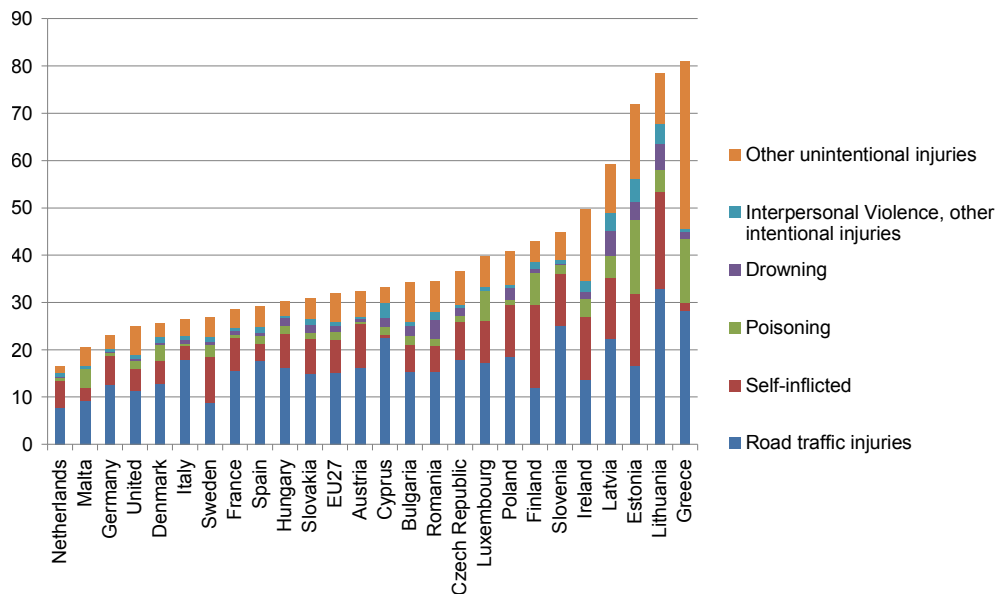
**Suicide is the second leading cause of fatal injuries among adolescents<sup>2</sup>:**

- Suicides account for an alarming 20% of all fatal injuries among adolescents. The suicide rates per 100 000 adolescents are approximately 3 times higher for boys than for girls (IDB report).
- Self-harm and suicides are often closely related, and risk-factors for self-harm are quite similar to those for suicide. They include psychological, biological, social and environmental factors and factors related to personal history. The trigger for self-harm and suicide can be an unfortunate event, such as a relationship breakdown, interpersonal problem or financial difficulty. But depression or other psychiatric disorders, affiliations with deviant peer groups, binge drinking, and being victimised by violence or bullying, also are important associated contributing factors.

**Considerable differences between countries in the injury fatality rates<sup>2</sup>:**

- There are considerable differences between countries in the injury fatality rates for adolescents (Figure 3). E.g., injury in young people accounts for 54% of the total number of deaths in the Netherlands in this age group while in Estonia it is the cause of 76% of fatalities in this group (Table 1).
- The size and pattern of differences in death rates across Europe indicates substantial potential for reducing the burden of youth injuries by extending existing efforts across countries.

**Figure 3 Main causes of fatal injuries in adolescents between 15–24 years by EU Member**



Source: States Source: WHO MDB 2005-2007, reproduced from Bauer R, Steiner M (2009)

**Table 1 Excess factor for adolescents (15-24)**

Based on crude rate of hospital treated injuries per 1.000 population for selected EU countries

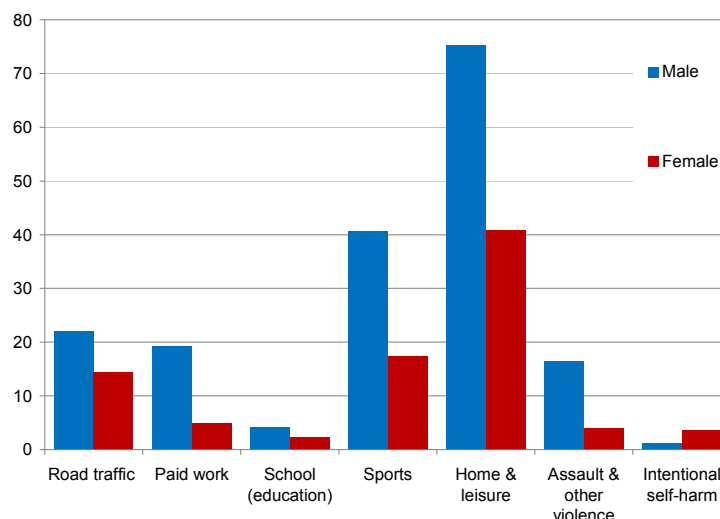
|         | Road traffic | Paid work | School (education) | Sports | Home & leisure | Assault & other violence | Intentional self-harm | Total |
|---------|--------------|-----------|--------------------|--------|----------------|--------------------------|-----------------------|-------|
| Males   | 2,1          | 3,3       | 5,1                | 5,4    | 2,7            | 6,0                      | 2,8                   | 3,5   |
| Females | 2,0          | 2,0       | 2,2                | 2,3    | 0,9            | 2,4                      | 2,4                   | 1,3   |
| Total   | 2,1          | 1,7       | 2,2                | 2,6    | 1,1            | 2,9                      | 2,0                   | 1,6   |



**Non-fatal injury rates are highest in young people, young men in particular<sup>2</sup>:**

- According to EU IDB estimates, each year 8.4 million adolescents between 15 and 24 years of age have to be treated for an injury in EU hospitals. This represents 20% of all hospital treated injuries, whereas adolescents only represent 13% of the total EU population.
- Non-fatal injury rates are highest in young people - as compared to other age groups - in virtually all settings, particularly roads, sports, workplace and violence related injuries (Figure 4). The overall “excess factor” for adolescents is 1.6 (compared to the average value of one for all age groups). The ‘excess factor’ (see table) is highest for young men for assaults (6.0), sports (5.4) and school injuries (5.1).
- Among young people the rate of hospital treated injuries is highest in the domains of ‘home & leisure’ and sports injuries, with a significantly higher rate again for men (Figure 5).
- The share of intentional injuries, mainly through assault, in adolescents is about 10% for both sexes.
- For some injuries the significant differences between boys and girls reflect behavioural preferences leading to different exposure patterns. In sports, for instance, this has been confirmed by various opinion polls: there are clearly more European boys than girls practicing sport (63% compared to 37%). In traffic injuries, different risk taking behaviours seem to explain sex differences in injury numbers, as the rate of young motor drivers is about the same in young men as in women.

**Figure 4 Injury rates of adolescents between 15–24 years by injury prevention domain and sex (hospital treated injuries per 1.000 inhabitants)**



Source: EU IDB (hospital A&E), 2005-2007

**Risk factor sports**

Annually, about 5.8 million people have to be treated in hospital for a sports injury as defined by the EU IDB catalogue of sports – one third of those affect the 15-24 olds.

50% of the sports injuries of young people arise from team ball sports, with soccer accounting for almost three quarter of cases within that category.

**Youth violence on the rise?**

Youth violence is perceived as a growing problem in many countries<sup>3</sup>. Although this alleged trend is not yet clearly confirmed by international data sources, national data sources seem to support this perception. The Austrian hospital discharge register, for instance, reports an increase from 36% in 1998 to 48% in 2008 in the share of adolescents in victims of assault.

**Risk factor alcohol**

Alcohol use is a significant risk factor for both unintentional and intentional injuries in young people. It is estimated that around 40% of all injuries are attributed to alcohol consumption, in particular among males<sup>4</sup>.



### **Unmet data needs**

Despite the considerable information that is available for fatal and non-fatal injuries of adolescents and injuries in general – some of which has been presented above – a higher level of comparability of different data sources and more details about important injury determinants like alcohol within sources are required (see box 1).

### **Box 1 Injury Data Base (IDB) and cross-sector injury data**

Young people, especially young men, face the highest injury risk among all age groups. Road traffic, sports, work place and also violence related injuries are all dominated by males. In view of the new general concept of teaching risk competency to young people for all injury relevant settings, also cross-sector injury information is gaining more and more importance.

The EU Injury Data Base is an emergency department based injury surveillance system that was originally focusing on home and leisure injuries, but has since 2005 been extending its scope to all types of injuries. In 2010, the majority of all IDB countries is expected to have the “all injury” information available for comparable injury figures across all sectors. This makes the EU IDB relevant data source for both sectoral and inter-sectoral injury prevention.

To a large extent, the national IDB systems have been harmonised in past years with the help of projects, co-funded by the Public Health Programme 2003-2008<sup>5</sup>. In 2010, already 15 countries collect data in accordance with a harmonized methodology and feed this data into a joint data base, the European Injury Database IDB, hosted by DG Sanco. In 2004, the Strategy on European Community Health Indicators (ECHI) has been adopted, and IDB has been identified as the recommended source for deriving health indicators on injuries beside workplace and roads.

In 2009, the network of IDB data suppliers has adopted a new strategy on how to improve the comparability of data, the accuracy of estimates incidence rates as health indicators, and the geographical coverage. It is planned to implement this strategy within the Second Community Health Programme 2008-2013 with a longer term view as to the integration of IDB within the European Statistical System by the year 2015.

More information: <https://webgate.ec.europa.eu/idb/>.

## **Why the safety of adolescents matters**

### **Youths are a precious resource**

Children and young people are a precious resource for society also in the light of demographic trends. Since 1997 the percentage of the population between 15 and 24 years has dropped from 13.6% to 12.4% in 2008. In 2030 Europe will have 18 million less children and young people than today<sup>3</sup>.

### **Excess risk taking among young people**

The excess injury risk of adolescents in virtually all settings is reason enough for developing and implementing specific policies and measures that address risk taking among young people. The excess death toll among adolescents makes injury prevention in young age groups an important public health issue.

### **Effective prevention measures are available**

Existing injury control policies and programmes, mainly based on legislation or on voluntary regulations and standards, have already contributed to reducing the number of fatal injuries of young people over the last few decades. These regulations and relevant enforcement measures need to be maintained at the highest possible level of quality and complemented by new initiatives based on evidences as to good practices in prevention. Examples of effective actions for reducing injury risks for young people have been identified in diverse settings as road transport, school, work and leisure<sup>6</sup>.

### **New approaches in communicating with youth**

New approaches are required to address the main determinant of injuries among young people: their risk-taking behaviour. Young people's eagerness to explore new challenges does, not unavoidably have to lead to serious or even fatal injury. Challenges can be still explored



and limits tested without risking life and limbs. Training and education need to support young people in developing their competencies and skills necessary to identify and assess potential risks and to cope effectively with those risks. It does not make sense however to simply teach “do’s”, and “don’ts” to young people.

### **Role of the health sector**

With road injuries being the number one killer among adolescents, the main responsibility for the safety of young drivers is with the traffic safety authorities, but also other policy sectors can make substantial contributions. The health sector provides emergency trauma services both in pre-hospital and in hospital care, as well as rehabilitation services. Moreover, the health sector can amplify safety efforts through its advocacy, education and research activities<sup>7</sup>.

Important is also the health sector role in the area of surveillance. Emergency department based injury surveillance systems, like the EU IDB, provide the necessary injury cause and consequence information, for the large number of incidents seen in hospital emergency departments for all types of intents and all injury settings. This kind of data is a prerequisite for inter-sectoral injury prevention.

### **Good practice in prevention of injuries of young people**

Interventions that target a variety of aspects, embedded in a wider context, aiming at different target groups like community based programmes, including education, enforcement and engineering, are most likely to be effective. That means, community programmes involving the cooperation of local authorities, agencies and individual citizens and comprising changes to the physical environment, information, education and supervision.

Examples of effective actions for reducing injury risks for young people have been identified in diverse settings as road transport, school, work and leisure<sup>6</sup>.

### **On the road - traffic regulations**

In road traffic regulatory measures and strict enforcement have been proven to be successful, such as graduated driver licensing for novice drivers, lowered speed limits, and lowered drink driving (BAC) limits, full-face helmets for motorcyclists<sup>8, 9</sup>. Promotion of seatbelt use and bicycle helmets is to be recommended as well as the provision of late-night transport.

The recent WHO- progress report<sup>10</sup> identified and reviewed the implementation of a number of programmes for preventing road traffic injuries, many of which are applying specifically to young road users:

- Increasing the minimum legal drinking age;
- Sobriety checkpoints;
- Greater use of safer modes of transport
- Speed-reduction measures;
- Introducing and enforcing motorcycle helmet laws;
- Enforcing seat-belt laws;
- Daytime running lights on motorcycles;
- Graduated driver licensing systems;
- Enforcing laws on BAC limits;
- Age of car drivers from 16 to 18 years;
- Age of motorcyclists from 16 to 18 years.

### **No risk but fun - Sports safety**

Regular physical activity is essential for keeping fit and for staying in good health. However participating in sports also carries a risk of being injured. Fortunately, there are many possibilities to prevent sports injuries, e. g. through making sports infrastructures safer, using protective equipment, or by training and coaching.

Given the European dimension of sports, it is important to share EU experiences in practicing sports safely. ‘Safety in Sports’, co-financed by the European Commission, aims to share



knowledge on the prevention of acute and overexertion sports injuries and to establish a sustainable European network of experts from science, sports clubs and sports associations, and others with a keen interest in preventing sports injuries. In an exemplary approach safety management schemes and draft toolkits for injury prevention in handball and basketball will be developed (<http://www.safetyinsports.eu/>).

### **Getting to work - Occupational safety**

Young workers are more often involved in non-fatal occupational injuries than older workers, but fortunately their injuries are less often fatal. Farms, construction sites and manufacturing industries are considered to be the most hazardous working places, also for young people. Lack of experience, insufficient training in occupational safety, frequent job changes and lack of supervision contribute to young people's increased risk at work.

At work, novice employees should receive special training sessions on specific work tasks and related safety aspects. In known high risk occupations protective equipment should be mandatory and strictly enforced.

### **Stop violence**

As to preventing violence, school-based violence prevention interventions and mentoring programmes teaching problem solving skills has been proven to be effective to decrease the likelihood of drug use and to reduce self-reported forms of antisocial behaviour.

Social development programmes that concentrate on emphasising social competence and skills can prevent youth violence. School-based violence prevention interventions are most effective when they are backed up by other changes in the community, i.e. are part of a whole school curriculum, run over multiple sessions and involve family and community.

The recent WHO Report Europe<sup>11</sup> identified and reviewed the implementation of the seven programmes to prevent violence inflicted on or by young people:

- Psychological interventions for children exposed to violence;
- Interventions to identify and treat conduct and emotional disorders in early childhood;
- Educational incentives for at-risk high-school students;
- Family therapy for children at high risk;
- Life skills training programmes;
- Home-school partnership programmes for parents;
- Preschool enrichment.

### **Less alcohol, no drugs**

Life skill development programmes are effective to help young people to develop essential skills found to significantly reduce alcohol and drug abuse, and also violence<sup>12</sup>.

Recently a resolution on 'Alcohol and injuries' has been adopted by EuroSafe that calls upon Member States and the Commission to establish co-ordinated alcohol reduction policies in collaboration with all relevant safety sectors as well as with nongovernmental organizations in order to address effectively this important risk factor to injuries and violence.

### **Risk competency training**

Risk competency training schemes and curricula developed for school education, vocational training, driver education or sports training as well as in extra-curricular youth work, can significantly increase young people's competencies and skills in coping with risks in everyday life. There are ample opportunities for applying these schemes<sup>4</sup>.

- Road traffic, by integrating risk competence training in road safety education schemes and driver rehabilitation training and in programmes for graduated licensing.
- Schools: by developing and promoting a school programme for risk competence building, training standards for teachers and proper arrangements for letting youth play an active role in these programmes.
- Sports: developing guidelines and training standards for safety and risk competence in specific sport areas targeting young people, and implementing training schemes for trainers.



- Extracurricular youth settings (youth work): Integrating risk competence and life skill development in policies for youth work, disseminating effective good practices for developing risk competence, supporting the development of favourable settings for learning risk competence in the public space (e.g. adventure areas) and by developing youth pilot projects based on the needs of target groups in specific social settings.
- Workplace and vocational training: by mainstreaming risk competence development in programmes for occupational safety and health in different sectors with a specific focus on young workers.

For such injury prevention and safety promotion training and education programmes to be truly effective, adolescents should be a key partner in their development. Youth are the experts with respect to their own matters and they know best how to communicate the issues with their peers.

### ***Split the Risk – young media for young people***

The EC sponsored AdRisk “European Action on adolescent and injury risk” project identified 35 tools in various EU-countries to develop risk competency amongst youth. These tools have been compiled into a toolbox to provide professionals and volunteers working with young people with ideas on how to develop safety promotion projects with adolescents. The toolbox contains videos, leaflets, fact sheets, manuals, video clips, instructor’s tools, campaign materials, brochures, questionnaires, guidelines, etc. It includes examples of workshops with young people addressing all kinds of risk-taking behaviour and documentaries on adolescents and risk-taking behaviour. Along with the AdRisk Good Practices Guide and the AdRisk European Situation Analysis, the toolbox enables professionals and volunteers to engage in actions in local settings. Please find the toolbox with information on how to develop safety promotion projects with adolescents at: [www.adrisk.eu.com/](http://www.adrisk.eu.com/).

## **Conclusions and policy recommendations**

Given the high injury rates among young people, governments should place injury prevention and safety promotion for young people still higher on the public health agenda. They should invest more efforts in implementing the Council Recommendation on the prevention of injury and the promotion of safety adopted in May 2007. They should ensure that safety, as well as healthy development of young people, is a priority within all relevant policies and programmes and is being included in relevant interdepartmental plans as well as plans specific to certain sectors like road transport, workplace environment, education system or in the community.

Also new approaches should be encouraged that address the main determinant of injuries among young people: their risk-taking behaviour. Training and education need to support young people in developing their competencies and skills necessary to identify and assess potential risks and to cope effectively with those risks. Risk competency training schemes and curricula developed for school education, vocational training, driver education or sports training as well as in extra-curricular youth work, can significantly increase young people’s competencies and skills in coping with risks in everyday life.

### ***The role of the health sector in injury prevention summarized in the following activities<sup>7</sup>:***

- Discovering needed details about injuries through surveillance, researching the causes and influencing factors;
- Working to persuade decision makers to address injuries as a major health problem;
- Promoting or leading cross-sectoral collaboration e.g. by developing and implementing national action plans on injury control;
- Translating effective science-based information into policies, helping to implement promising interventions by the means of health education;
- Promoting capacity building in all areas including health services;
- Evaluating programmes by the means of injury surveillance.





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