Injury surveillance – a good use of limited resources?

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What is surveillance?

- Original meaning “continuous observation”
- Part of public health intelligence
- Sometimes synonymous with monitoring
- Implies as link to action of some kind
Examples of specialised public health surveillance systems

- Infectious diseases
- Cancer
- Congenital anomalies
- Injury
The ongoing and systematic collection, analysis, interpretation and dissemination of health information

Injury surveillance - an expanded definition

The ongoing and systematic collection, analysis, interpretation and dissemination of - and public health response to - health information

Stone 2012
OBJECTIVES OF INJURY SURVEILLANCE

- to detect trends in incidence
- to identify risk factors/ causes
- to develop preventive and control measures
- to evaluate impact of prevention
Injury surveillance levels in relation to injury pyramid

- Mortality
- Morbidity
- Hospitalisations
- Emergency departments
- Exposures
- Risk factors
ED or not ED?
That is the question

- “Injury surveillance” almost synonymous with emergency department based data collection

- Non-ED settings should also be considered

- Multiple sources of data should be used if possible
Examples of non-ED based injury surveillance

- Routine mortality and morbidity data
- Routine hospitalisation data
- Specialised trauma registries
- Specialised settings (schools, workplaces etc)
- Population surveys
- Media monitoring
Why ED based injury surveillance is appealing

- ED often serves a defined, local population
- Almost all types and severities of injury present
- Large numbers, wide age range
- Data collection straightforward (in theory)
Why ED based injury surveillance is challenging

- Resource and personnel demands
- Takes second place to clinical care in busy EDs
- Absence of clear denominators, bias
- Ensuring total coverage (including nights, weekends)
Examples of ED based injury surveillance systems

- **Victorian Injury Surveillance System (VISS)**
- **All Wales Injury Surveillance System (AWISS)**
- **National Electronic Injury Surveillance System (NEISS)**
- **Canadian Hospitals Injury Reporting and Prevention Programme (CHIRPP)**
Age- and sex-specific attendance rates per 1000 for injury at emergency departments in north-west London

Source: Jamrozik K et al (2007)
CHIRPP

Canadian Hospitals Injury Reporting and Prevention Programme

- Electronic injury surveillance programme
- Questionnaire at presentation to ED
  - Mechanism, location, circumstances
  - Nature, body part(s), treatment(s)
- CHIRPP form completed for child; data coded, entered and stored on a computer
CHIRPP in Glasgow (Y-CHIRPP)

- Ran at Yorkhill Hospital, Glasgow 1996-2005 (approx 12,000 cases per annum)

- Primary aim was to monitor and prevent injuries in children aged 0-12 years

- Secondary aim was epidemiological research
Y-CHIRPP research: Example 1 - what child was doing
(McInnes 2007)

- 62% occurred during play
- Lowest proportion 0-11 months (37%) rising to 64% in 12-35 months then plateau
- 17% occurred while child was on the move
Y-CHIRPP research: Example 2 - Social deprivation and injury risk (McInnes 2007)

Injury Rate by Deprivation Category

Injury Rate per 1000 population

Deprivation Category
Aims of qualitative evaluation of Y-CHIRPP

- To determine whether Y-CHIRPP failed and, if so, why?
- To draw generalisable lessons about ED based injury surveillance
Methods

- Retrospective review of all written material relating to Y-CHIRPP
- Semi-structured interviews with staff involved in running the system
- Analysis of the above to identify
  - the process of injury surveillance
  - any changes made
  - strengths and weaknesses (WHO criteria)
Attributes of a good injury surveillance system

- Simplicity
- Flexibility
- Acceptability
- Reliability
- Utility
- Sustainability
- Timeliness

Results: strengths and weaknesses of Y-CHIRPP

- Largely met criteria of simplicity, flexibility and acceptability

- Failed to meet criteria of reliability, utility, sustainability and timeliness
Costs of running Y-CHIRPP

- Difficult to estimate
- Heavy reliance on ED staff
- Additional costs of data collection, entry, processing approx. £20,000 in total (£2 per case)
- Even these costs were unsustainable when scaled up (12-15,000 cases per annum)
Conclusions re Y-CHIRPP

- Injury surveillance in a busy children’s ED is feasible

- Y-CHIRPP was only partially successful and proved unsustainable

- Relied excessively on busy clinical and administrative staff

- Key problem: lack of perceived preventive utility
Recommendations re Y-CHIRPP

**ED based injury surveillance requires three key supporting posts:**

- Permanent (preferably senior) ED staff member
- Data manager to ensure data collection and analysis
- Injury prevention practitioner or “translational researcher”
Ethico-legal aspects of surveillance of children in UK

- UK Data Protection Act 1998 – privacy, confidentiality, consent: "Information will not be collected from children under 12 without first obtaining the permission of a parent or guardian." UK Information Commissioner

- Children's Act Scotland (1995) – competent child can consent, best interests of child paramount (unlike rest of UK)

- International – UN Convention of Rights of the Child, European Convention on Human Rights, EU Directives
ED based injury surveillance –
five bottom-line messages

- Easy to propose, hard to do
- More than data collection and analysis – must be linked to action
- Needs local commitment, data management skills and liaison with other agencies
- Resource demands challenge sustainability
- Take account of ethico-legal context
An inconvenient truth: *More data won’t always lead to more prevention*

- Most injuries presenting to EDs are minor
- Evaluation studies tend to focus on process rather than outcomes
- Evidence that injury surveillance systems prevent injury incidence is non-existent
- Prevention can be implemented without surveillance
  - beware the cry “If only we had more data!”
Is injury surveillance a good use of limited resources?

- Answer unclear – depends on rationale, resource allocation, local skills and leadership
- Injury surveillance – broadly defined - is a valuable but insufficient aid to prevention