A guide to using health data to inform local violence prevention

Produced as part of the Department of Health funded project Optimising the use of NHS data in local violence prevention and measuring its impact on violence

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Key messages

- Anonymised health data have an important role to play in preventing local violence.

- Health data sources available at a local level include: local Accident and Emergency department (A&E) data, HES (Hospital Episode Statistics) experimental A&E data, HES hospital admissions data and ambulance service data.

- Data from these sources can be analysed to: measure the extent of violence in a local area and identify long term trends; identify when assaults are most likely to occur; identify at-risk populations and communities; identify hotspot locations for violence; and identify the circumstances of assault.

- These pieces of information can support violence prevention through e.g. informing needs assessments, identifying police priorities, setting and monitoring local targets for violence, informing the types of strategies needed, informing the timing and location of interventions, identifying which population groups interventions should target, supporting police licensing decisions and reviews, and evaluating violence prevention activity.

- The use of anonymous health data in local violence prevention relies on the regular sharing of data between health services and local partners involved in addressing violence (e.g. Community Safety Partnerships [CSPs], public health professionals and police).

- A number of factors are thought to be helpful in achieving successful data sharing systems between health services and local partners. For A&Es in particular, this includes: a dedicated post/staff member within an A&E to take data sharing forward; strong relationships between A&E staff and local partners; the existence of a data sharing partner/agency to facilitate data sharing; regular feedback to A&E staff on data use; positive attitudes towards the collection and use of A&E data among all partners; and training of A&E staff in collecting assault data.

- Data sharing systems could be set up using the following guide: Step 1 - hold initial meetings between health services and local partners; Step 2 - explore and agree how existing data fields can be used and shared, whether any extra data fields are required, and how these can be collected and shared; Step 3 - agree on what a successful data sharing system will look like and how it can be monitored; Step 4 - develop a data sharing agreement between health services and local partners; Step 5 - initiate data sharing and ensure it is used to inform local violence prevention activities; Step 6 - set up regular feedback meetings between all partners.

- It is best practice to develop a data sharing agreement between health services and local partners to clearly specify how data will be provided, stored and used. This will ensure that the health data remains protected.
1. Introduction

Health data have an important role to play in preventing violence. Victims of violence can come into contact with a range of health services following an assault. At each point of contact, information will be collected on the patient, the injury sustained and the timing of treatment. For some services, information will also be recorded about the circumstances of the patient’s injury such as the location of assault, the weapon used and involvement of alcohol. This information can be used to measure the levels and nature of violence in a local area and identify the population groups and geographical areas most affected by violence. Between a third\(^1\) and 80\(^2\) of assault victims who require treatment in Accident and Emergency departments (A&Es) do not report their assault to the police. Health information can therefore make a valuable contribution to local violence prevention activity.

Recognising the potential of health data in informing local work to prevent serious youth violence (see Appendix 1 for more information), in 2010 the UK Government pledged to “make hospitals share non-confidential information with the police so they know where gun and knife crime is happening and can target stop-and-search in gun and knife crime hotspots”\(^3\). With a focus on A&E data sharing, this commitment has been accompanied by a national programme of work to support A&Es to collect additional information on violence and establish data sharing pathways with community safety partnerships (CSPs) and police. An Information Standard has been developed by the Health and Social Care Information Centre (HSCIC) that specifies a minimum set of data fields that should be collected at A&E; the assault location, the weapon used, the date/time of assault, and the date/time of A&E attendance\(^4\). These fields are based on recommendations made by the College of Emergency Medicine (CEM)\(^5\). Although this minimum dataset forms the focus of current work around health data sharing, other information fields within A&E data, and other health sources, have the potential to feed into local violence prevention. For instance, routinely collected ambulance service data can offer a valuable addition to police data in identifying hotspot areas for violence, many of which are not recorded in police data\(^6\).

The use of anonymous health data in local violence prevention activity relies on the regular sharing of data between health services and local partners involved in violence prevention (e.g. CSPs, public health professionals and police). This document has been designed to help health and other professionals set up successful data sharing processes (particularly for the sharing of A&E data; see Appendix 1) and understand how data from health sources can be analysed and fed into local violence prevention. This document aims to:

- Outline the various health data sources available and highlight how they can be used;
- Describe steps that could be taken to set up data sharing systems, particularly within A&Es;
- Highlight common barriers to setting up data sharing systems and how these can be overcome; and
- Outline how health information should be managed and handled to ensure that shared data are processed securely and legally.

More detailed information about the data sources outlined in this document, including their availability, access, limitations and use in violence prevention, is available from the Home Office/Liverpool John Moores University document Health data for violence prevention: a manual for community safety partnerships and other violence prevention partners\(^7\).
2. Health data sources and their uses

There are a number of health data sources available that can help inform local violence prevention activities. The data sources covered in this guide are:

- **Local Accident and Emergency department (A&E) data**: a core dataset (national commissioning dataset) collected by all A&Es that records information on all patients presenting for emergency treatment. Data include patient demographics, and time, date and cause of presentation (e.g. assault). Many A&Es collect additional information from assault patients (see Table 1).

- **HES (Hospital Episode Statistics) experimental A&E data**: a national dataset that collates the core dataset from local A&Es across England including patient demographics and date of presentation. The data includes information from A&Es, speciality A&E departments (e.g. dental), minor injury units and walk-in centres. Data can be analysed at both hospital and local authority levels.

- **HES hospital admissions data**: a national dataset that provides information on all inpatient admissions (patients requiring a hospital stay) to NHS hospitals, including private patients and admissions of NHS patients who are treated elsewhere. Data can be analysed at both hospital and local authority levels. Local authority level data are available via the Public Health Outcomes Framework (PHOF). The PHOF sets out a list of outcomes and indicators to help monitor changes in the public’s health. It provides a data tool including a range of key indicators, including violence-related hospital admissions.\(^1\)

- **Ambulance service data**: information on all call-outs made by the ambulance service. Ambulance data are available by ambulance trust areas (which span a number of local authorities).

Information on the most severe cases of trauma admitted to hospitals across England is also available from the Trauma Audit Research Network (TARN; Box 1). However, use of this data source as a tool for local violence prevention can be limited in some geographical areas and therefore TARN data is not a focus of this document.

Each of the four data sources outlined above can provide a different picture of violence within a local area. For instance, the ambulance service may treat an assault victim at the scene and not transfer them to an A&E, while many A&E patients self-refer and are not included in ambulance service data. Equally, patients admitted to hospital with serious violent injuries may be transferred from other health services and therefore not be recorded in A&E data. The type of information collected through each source varies and can offer different uses in violence prevention (Table 1).

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\(^1\) See: http://www.phoutcomes.info/public-health-outcomes-framework#gid/1000041/par/E12000004
Box 1: Trauma Audit Research Network (TARN) data

TARN is a collaboration of hospitals across England, Wales, Ireland and other parts of Europe. The network collects information on severe trauma, using this to support clinical audit and trauma service development. It is possible to isolate reports of severe assaults from TARN data, which can offer a complementary source of information to A&E and hospital admissions data. For local violence prevention, potentially useful fields include: patient demographics, the type of injury (blunt or penetrating), injury mechanism (e.g. stabbing, shooting) and injury location (e.g. home, public area). Although TARN data can provide a more detailed understanding of severe violence, there are reporting problems with some hospitals, with records lower than expected. In addition, numbers of severe assaults at a hospital level can often be very low and therefore difficult to interpret.

Source: The Trauma Audit and Research Network: https://www.tarn.ac.uk.
Table 1: Health data sources, relevant fields and their uses in local violence prevention

<table>
<thead>
<tr>
<th>Data source</th>
<th>Geographical area available</th>
<th>Frequency that data can be shared</th>
<th>Relevant data items included</th>
<th>Measuring violence and identifying long-term trends</th>
<th>Identifying at-risk populations</th>
<th>Identifying at-risk communities</th>
<th>Identifying hotspots</th>
<th>Identifying when assaults are most likely to occur</th>
<th>Identifying the circumstances of assault^c</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local A&amp;E attendance data (accessed through each local hospital)</td>
<td>Hospital</td>
<td>Typically monthly or fortnightly, depending on agreement with A&amp;E</td>
<td>Core dataset: age, sex, date and time of attendance, LSOA^b of residence. Where collected, details on the circumstances of assault, e.g. location, weapon, date and time, relationship to the perpetrator and alcohol use.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>HES experimental A&amp;E attendance data</td>
<td>Hospital and LA^d</td>
<td>Published yearly</td>
<td>Core dataset (see above).</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>×</td>
<td>✓</td>
<td>×</td>
</tr>
<tr>
<td>HES hospital admissions data</td>
<td>Hospital and LA</td>
<td>Published yearly</td>
<td>Age, sex, ethnicity, date of admission, LSOA of residence</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>×</td>
<td>✓</td>
<td>×</td>
</tr>
<tr>
<td>Ambulance service call-out data</td>
<td>Call-out location</td>
<td>Quarterly/monthly - negotiated with service</td>
<td>Age, sex, date and time of call-out. Other information may be available (e.g. use of knife or gun).</td>
<td>✓</td>
<td>✓</td>
<td>×</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

a. e.g. the weapons used, the type of assault and the broad location of assault  
b. LSOA = lower super output area: a set of geographical areas across England and Wales that are defined by population size (average population is 1,500)  
c. With the caveat that local residents may attend A&Es in other areas  
d. LA = local authority of patient residence  
e. However there are currently reporting problems for certain hospitals  
f. Useful for monthly trends  
g. Residential location is not included in the call-out dataset
The use of health data within local violence prevention

The following sections provide information on the ways in which anonymised health data can be used to inform local violence prevention. Examples of data use have been drawn mainly from the nine study areas included in the project: Optimising the use of NHS data in local violence prevention and measuring its impact on violence, from which this guide has been developed. This three-year project is funded by the Department of Health (for more information see Appendix 2).

Measuring violence and identifying long-term trends

Local A&E attendance, ambulance service call-out and hospital admissions data can all be used at a strategic level to identify the extent of violence within a local area and to monitor trends. Data can show the total numbers of assault patients treated by year (see Appendix 3; Example 1), month or any other time period, and this information can be used to inform needs assessments, identify strategic policing priorities, support the development of violence prevention strategies, set targets, and evaluate prevention activity (see Box 2). There are currently limitations with the use of HES experimental A&E attendance data for these purposes. Although the quality of this data source is improving year on year, there are known reporting problems for certain hospitals meaning that the numbers of reported assault attendances may be lower than expected⁸. This also hampers the identification of trends in violence since changes in assault levels could be due to changes in reporting from some hospitals. In time, however, this is likely to be a useful data source.

Box 2: Use of A&E data to reduce alcohol-related A&E assault attendances

In Wirral local authority, Arrowe Park Hospital A&E has collected information on the consumption of alcohol prior to assault and the location of assault by patients presenting with assault-related injuries since 2003/4. These data were used to inform the development of the Wirral evening and night-time strategy, which aimed to minimise the health risks associated with the nightlife economy whilst maximising the benefits that nightlife could play in people’s social lives. The data were used specifically to set and monitor a community safety target to reduce alcohol-related A&E assault attendances by 15% over a four-year period (2004/5 to 2007/8). Over this period, the data were used to inform multi-agency activity, including enforcement work targeted at problematic licensed premises (those venues that featured most frequently as the locations of assaults). The activity contributed to the 15% target being exceeded by 2007/8⁹.

Identifying when assaults are most likely to occur

Information on assault timings (the month, day and/or time that assaults took place), is available from local A&E attendance, HES experimental A&E attendance, ambulance service call-out and hospital admissions data. Since a victim of violence can be admitted to hospital much later than the assault took place, hospital admissions data are most useful for identifying trends at monthly or annual levels. However, more specific information about assault timings can be generated from the other three data sources.

Ambulance service call-out data are currently the most reliable source for providing information on assault timings since call-out times are recorded automatically for all cases when an ambulance is first requested. Some A&Es record the actual time and date of assault; which is part of the CEM’s recommended dataset⁵ (see Appendix 1) and available through local A&E sources. However, since
this relies on victim reports, these fields (particularly the time of assault) can be poorly completed. Nevertheless, basic information on the date and time of presentation to the A&E (available from HES experimental and local A&E attendance data) can also be used as a proxy for assault time and date. Analysis of data by date and time (e.g. total numbers of assaults by day and hour grouping) can help identify when violence is most likely to take place (see Appendix 3; Example 2) and can be used at an operational level to inform the timing of police operations and community interventions (Box 3).

### Box 3: Use of A&E data to explore the effect of the 2010 World Cup football tournament on levels of assault

In the North West of England, data from 15 A&Es were analysed to explore the impact of the 2010 World Cup football tournament on A&E attendances for assault. By comparing numbers of assault attendances before, during and after the World Cup to equivalent time periods in previous years (2007-9), the analysis found that assault attendances increased by 37.5% on days that England played. Day of the week was also independently associated with an increase in assault attendances, with attendances higher on Fridays, Saturdays and Sundays. This information shows the effect that large sporting events can have on levels of violence, highlighting the need for local and national preparation for such events. For instance, at a local level this could include increased policing around public venues televising the matches, controlling alcohol promotions on these days and measures to prevent excessive alcohol consumption by spectators.

### Identifying at-risk populations and communities

Local A&E attendance, HES experimental A&E attendance, ambulance service call-out and hospital admissions data can all provide information on the age and sex of victims of violence. Ethnicity is also recorded in hospital admissions data and sometimes local A&E attendance data. Analysing data by these patient characteristics (e.g. establishing the total rates of assaults for males/females, each age group and each ethnicity category) can help identify those groups of people most affected by violence (see Appendix 3; Example 3). This information can be used at a strategic level to help target violence prevention resources (e.g. programmes to reduce and prevent violent behaviours) at those groups most in need of support (Box 4).

Information on assault patients’ area of residence (LSOA converted from patient postcode) is available from local A&E attendance, HES experimental A&E attendance and HES hospital admissions data. Analysing the data by this geography (e.g. calculating crude rates of assault by LSOA) can help identify which communities within a local authority area are most affected by violence (see Appendix 3; Example 4). HES experimental A&E attendance and HES hospital admissions data sources can provide the best picture of at-risk communities, as data are collated nationally and cover attendances/admissions across all NHS hospitals. Local authority level data therefore includes all patients resident in one local authority regardless of which hospital they attend. Local A&E attendance data from a single hospital has limitations in this respect, since it does not account for residents attending an A&E at a different hospital and will also include patients that have travelled into the local area from other authorities. Nevertheless, local A&E attendance data can still help to

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1. Included in the minimum dataset in the HSCIC information standard (2014).
2. However there are currently reporting problems for certain hospitals that may affect the accurateness of local and LSOA level analyses, see page 5 (Measuring violence and identifying long term trends).
identify at-risk communities. Furthermore, a more complete picture can be gained across the local authority if data from neighbouring A&Es are accessed and analysed at the same time.

**Box 4: Use of A&E data to target prevention activities at groups at risk of violence**

In Wigan local authority, A&E attendance data (demographics and alcohol consumption prior to assault) collected at the Royal Albert Edward Infirmary were analysed and fed into an alcohol audit to identify groups of the community at risk of assault/problematic alcohol use. These groups were subsequently targeted with outreach services and awareness raising campaigns.

Identifying hotspot locations for violence

Data on the location of assaults can be obtained from ambulance service call-out data and in many areas from local A&E attendance data (where CEM-recommended data fields are collected). Ambulance service data automatically records the X and Y co-ordinates of the call-out location, which can be mapped using mapping software (e.g. MapInfo) to identify hotspot locations for violence (see Appendix 3; Example 5). Location data from the A&E are usually recorded in a free text field (e.g. name of street, school or venue). It is possible to identify venues or areas that appear frequently from this free text information. However, this data needs to be manipulated (e.g. determining the postcode of the venue and the corresponding X and Y co-ordinates) before it can be mapped in the same way as ambulance service data. This process can often present difficulties. For instance, the accuracy of the location field will depend on what the patient knows (a patient may not know the name of the street where they were assaulted for example), can remember, or is willing to disclose. Furthermore, the location provided may be too vague to pinpoint an accurate X and Y co-ordinate. Despite these potential limitations, the identification of hotspot locations can be used to enhance police intelligence about problematic locations, and if data are shared regularly (e.g. monthly or fortnightly), can often act as an early warning system to enforcement agencies. This information can be used to inform where police resources or community interventions should be targeted (Box 5). In some instances, hotspot location information has been used to support licensing decisions (see Box 6).

**Box 5: Use of health data to target prevention activities in hotspot locations**

In Lambeth local authority, A&E attendance data collected at King’s College Hospital (the detailed location of assault) were analysed alongside ambulance service call-out data (location of ambulance call-outs) and crime data to help inform where police operations should be targeted. Areas of Lambeth that were identified as having significant night-time economy and gang issues were targeted. Police operations in these areas used overt and covert tactics to address violence, including increased visits to licensed premises.

In the West End of London (Westminster local authority), ambulance service data for assaults was analysed to help inform where police operation activity should be directed to deter crime in public places. Pubs, clubs and other venues experiencing high levels of violence were identified, allowing police to work with these venues to adopt better practices. In addition, a crime mapping method known as “hot blocking” was used to highlight sections of roads with the highest risks of assault. This allowed police to identify where resources would best be deployed. The methods used were thought to have contributed to a 33% reduction in ambulance call-outs for assault in the West End.
of London between 2011 and 2012\textsuperscript{13}.

**Box 6: Use of health data within licensing reviews and appeals**

In Preston local authority, A&E attendance data on assaults, including fields recommended by the CEM, are monitored by the public health team on a monthly basis. Based on the number of assaults that take place inside them, potentially problematic premises are identified and discussed with local police. In December 2012, A&E attendance data were used to support an application by police to review the licence for a problematic night-time venue. NHS Central Lancashire submitted evidence supporting the review, detailing:

- Numbers of individuals attending following an assault that they stated took place at the licensed premise;
- Times and days of assaults;
- Weapons used;
- Gender and age of assault patients;
- Outcome of attendances i.e. discharged, admitted to hospital, left without treatment, referred to other healthcare professional; and,
- Whether the assaults were reported to the police.

The evidence identified that there were high numbers of individuals attending the A&E following assaults at this venue. Data were presented at the hearing in line with a locally agreed information sharing protocol. Following adjournment of the initial hearing, a second hearing took place in June 2013, where representatives from the public health team attended and presented the data alongside evidence presented by the police. The hearing resulted in changes to the licence conditions for the venue (e.g. installing CCTV cameras on all exit doors), and also a commitment by the operator of the premises to carry out a significant refurbishment. The premises re-opened in August 2013 after a £500,000 refurbishment\textsuperscript{14}.

In Cambridge, the City Council used A&E data on assault presentations (location of assault) as evidence within two licensing appeals. Ambulance service data (location of ambulance call-outs) were also used within the second appeal. In both cases, retailers had appealed against decisions to prohibit the sale of alcohol close to a homeless shelter in a cumulative impact zone (an area identified by a local authority to have a concentration of licensed premises that is causing disorder or public nuisance). Data were used to highlight the numbers of assaults taking place in the areas around the retail outlets. The courts found that the health data supported police data and a petition from local residents, and the appeals were unsuccessful\textsuperscript{15}.

**Identifying the circumstances of assault (e.g. the weapons used, the type of assault and the broad location of assault)**

Information on the weapon used in an assault is available from local A&E attendance data (where CEM recommended fields are collected), and from hospital admissions data (included within ICD-10 classifications\textsuperscript{iv}). It is also possible to identify assaults relating to certain weapons (e.g. guns and

\textsuperscript{iv} International statistical classification of diseases and related health problems, 10\textsuperscript{th} revision. ICD-10 classifies the cause of assault (e.g. sharp object, bodily force, firearms).
knives) from ambulance service data, although data fields and recording will vary from service to service. Some A&Es will collect additional information on the circumstances of assault, such as the type of assault (e.g. domestic violence, gang-related violence), the relationship of the victim to the perpetrator (e.g. stranger, partner), and whether or not the victim had been drinking prior to the assault. Analysis of these fields (e.g. total numbers of assault for each weapon type, violence type, relationship category) can help gain a better understanding of violence in local areas and the context in which it occurs (see Appendix 3; Example 6). Information on weapons and type of assault can be used at an operational level to inform the type of intervention needed (e.g. use of polycarbonate glassware; see Box 7). Information on the broad location of assault, relationship to attacker, and use of alcohol prior to assault can be used at operational and strategic levels to inform where interventions would be best targeted (e.g. home, school, nightlife areas; see Box 8) as well as the type of interventions needed. Importantly, regularly sharing details of assault weapon use with local partners does not replace the General Medical Council (GMC) duty for hospital staff to inform police whenever a person arrives at hospital with intentional injuries caused by a gunshot, knife, blade or other sharp instrument16.

Box 7: Using A&E data to inform the type of intervention

In Wirral local authority, A&E assault data collected at Arrowe Park Hospital were examined (the weapon used in the assault/mode of injury) and a high number of glass-related injuries identified (22 cases in 2006/7). These data were used to motivate licensed venues in Wirral to begin using safer drinking vessels made from polycarbonate at peak times for violence. Polycarbonate is a very strong and thick plastic that is virtually unbreakable, yet is very similar in appearance to standard glassware used in nightlife venues. During the year of implementation (2007/8), glass-related injuries presenting to the A&E fell to just eight (compared with 22 in the previous year)17.

Box 8: Using A&E data to inform the location and type of intervention

In Wirral local authority, A&E assault data (collected at Arrowe Park Hospital) includes fields on a victim’s alcohol consumption, such as whether alcohol was drunk within three hours prior to the incident and also where the last drink was consumed. As part of regular analysis of the data, partners from the CSP found that a surprisingly high percentage of patients who presented at Arrowe Park A&E for an assault reported having had their last drink in neighbouring Liverpool. Anecdotal evidence identified transport difficulties resulting from night buses from Liverpool to Wirral dropping passengers off in busy Wirral nightlife areas. This process created subsequent competition for transport. After discussing findings with police, a police initiative funded a bus company to provide relatively inexpensive transport in affected areas to help disperse people quickly. Subsequent analysis of the ‘last drink location’ field identified a reduction in the percentage of assault victims reporting their last drink in Liverpool17.

The use of individual-level data in violence prevention: safeguarding adults and children

This document has so far considered the use of anonymised data in local violence prevention. In some instances, however, individual-level data can be used to protect specific assault patients from the harms of future abuse. In these instances, assault patients’ names and personal details may be
shared confidentially with relevant organisations that provide support services. This is often carried out in agreement with victims (e.g. referring an assault patient to local support services). For instance, in Preston local authority, data from the Royal Preston Hospital A&E are used to identify victims of domestic violence, who are offered a referral to a weekly drop-in clinic run by Preston Women’s Refuge. In other instances, such as for children or domestic violence victims deemed at high risk of serious harm, data may be legally shared with relevant partners without consent.

For high risk domestic abuse patients, individual-level data may be shared at a local level within Multi-Agency Risk Assessment Conferences (MARACs). These are regular meetings, attended by representatives from a wide range of local agencies (e.g. health providers, police, housing officials, child protection services). At the conferences, a victim’s circumstances are considered from all relevant organisations, as different information may be known about a particular victim at different agencies. With all information considered, risks of future harm to the victim and any dependents are identified and an action plan developed for their safety. For instance, in Hackney local authority, data from Homerton Hospital A&E are being used to build a database of patients presenting with injuries consistent domestic violence. This allows A&E staff to identify patients who repeatedly present at the A&E due to domestic violence (those individuals at greatest risk of harm). Staff can then provide in-house support or refer the patient to other services, including MARACs.

Similar procedures are in place where there are concerns for the welfare of children. Here, individual-level data may be shared at local child safeguarding meetings, which bring together representatives from a range of services including health, police, probation and the local authority to discuss individual cases and develop action plans for their protection. Individual-level health data may also be used to provide in-house support services to youths at risk of involvement in serious violence. For instance in King’s College Hospital, Lambeth local authority, A&E data are used on a daily basis by youth workers embedded within the department. The youth workers identify young people who attend A&E with knife or gun injuries. These individuals are then either seen face-to-face within the hospital or followed up by telephone, and offered support (e.g. counselling).
3. Setting up data sharing systems

The use of health data in local violence prevention activity relies on the regular sharing of anonymised data between health services and local partners involved in violence prevention. This section presents a step-by-step guide to setting up data sharing systems for both A&E and ambulance service data (Figure 1), along with practical examples of successful systems (Boxes 10 and 11). Detailed research into how A&E data sharing processes are run in some local authority areas\(^{11,12,14,17,18}\) has identified a number of factors helpful in achieving success. These include:

- A dedicated post/staff member within the A&E to champion health data sharing, co-ordinate data collection and keep health data sharing on the A&E’s agenda;
- Building strong relationships between the A&E and local partners;
- The existence of a data sharing partner/agency, which can facilitate multi-agency communication and increase capacity for health data to be accessed by local partners easily and in a timely manner;
- Regular feedback to A&E staff about how local partners are using the data and the impact that data sharing has on the community;
- Fostering positive attitudes towards the collection and use of A&E data, both within the A&E and amongst local partners; and,
- Training of A&E staff with regards to any additional data collection (e.g. CEM-recommended fields).

Steps to setting up data sharing systems for sharing health data

Step 1. Hold initial meetings between health services and local partners (e.g. public health team, CSP, police, other interested organisations involved in violence prevention).

An essential starting point for initiating data sharing systems is to develop positive relationships between health services and local partners, and agree some common objectives (e.g. purpose and benefits of data sharing). Depending on knowledge of, and attitudes towards, the use of health data in local violence prevention, meetings may need to be set up to promote the value of collecting and/or sharing health data and how it can be used to inform violence prevention activities (see Section 2: Health data sources and their uses). In some local authorities, initial meetings have been taken forward by one or two local partners. However, in some areas it may be easier for data sharing to be taken forward by an existing local multi-agency group, who can sponsor or champion the work and bring relevant partners on board. It is important that initial meetings include local Caldicott Guardians, and/or health service IT and information governance staff, who can advise on how best to collect and/or share data and whether any amendments will need to be made to the IT systems. Discussions may need to address any concerns around protecting data confidentiality, which can often be a barrier to health data sharing. More information about the legislation governing the collection and sharing of personal data, steps that can be taken to ensure data protection, and the need for data sharing agreements can be found in Section 4: Managing and handling health data.
Tip: With ambulance data collected at a service level, the data held will span more than one LA. It may be effective to discuss potential plans for using ambulance data with local partners in neighbouring LAs and to approach the ambulance service together. Alternatively, if ambulance data is already being collected and used in neighbouring areas, it may be easier to use (or adapt) this existing model to request similar information for the LA rather than developing a separate data request.

Figure 1: A step-by-step guide to setting up data sharing processes for health data

**Step 1:** Hold initial meetings between health services and local partners

**Step 2:** Explore and agree how existing data fields can be used and shared
- Which existing data fields are required?
- What format should the data be shared in?
- Who will be responsible for anonymising the data?
- What frequency is the data needed?
- What process will be used to share the data?

**Step 3:** Agree on what a successful data sharing system will look like and how it will be monitored

**Step 4:** Develop a data sharing agreement between health services and local partners

**Step 5:** Initiate data sharing and ensure it is used to inform local violence prevention activities

**Step 6:** Set up regular feedback meetings between all partners

Explore whether any extra data fields are required and how these can be collected and shared
- How will extra data fields best be recorded?
- Is there a cost to updating the IT system and how can this be raised?
Step 2: Agree on what data will be collected and how the data will be shared.

Discussions on data sharing should focus on the following questions:

**Which data fields will be required by local partners and for what purpose?**

Discussions should take place firstly around which existing data fields could be used to inform local violence prevention. Partners should be clear on how the identified data fields will be used (e.g. to inform strategic or operational activities) to ensure that all requested data fields are justified. For A&E data, the Department of Health are rolling out a national programme of work to ensure that all A&Es are collecting and sharing a minimum set of data fields on assaults (see Appendix 1). However, other fields may also be useful (see Section 2: Health data sources and their uses). Therefore it may be necessary to discuss the possible addition of data fields onto the A&E IT system. Common barriers to the collection of these additional data fields are presented in Box 9, along with potential solutions.

**Tip:** It is important to consider when (e.g. reception booking in process), by whom and how any additional data fields will best be collected (e.g. in free text fields or drop down menus; as optional or mandatory questions) to ensure that data are as accurate and as useful as possible. Consider how the information will subsequently be analysed and used by local partners. Whilst drop down menus may be easier for reception staff to complete and local partners to analyse, in some instances it may restrict the amount of information that can be gained. Mandatory questions will yield higher completion rates than optional fields.

**Box 9: Potential barriers and solutions around additional data collection in A&Es**

Staff in some A&Es may feel that the A&E environment is not conducive to collecting any additional information on assaults (e.g. the reception area is not private enough). In some A&Es, data collection protocols have been created. Where patients are unwilling or unable to provide the information at A&E reception, a note is left on the system for the A&E speciality nurse, who then collates information from other sources such as the clinical notes. Staff training on the collection and recording of additional data will also provide staff with confidence in asking questions.

Where additional data are not already collected at the A&E, it will be necessary to amend the A&E IT system to collect these additional items. In some instances this can be done in-house at no extra cost. However, for other A&Es there may be a financial cost involved. As a first step, discussions should be held about how the funds could best be raised. It could be feasible, for instance, to split the cost of updating the IT system between all partners interested in using the A&E data.

Some IT systems cannot be adapted to include additional data fields. Here, A&Es should consider using a temporary paper-based system to collect additional data fields. This would still allow local partners to identify important information to direct intervention locations and type.
What format should the data be shared in?
Data can be shared at an anonymous and individual-level, or at an aggregated level (i.e. counts of assaults broken down by certain factors, e.g. location of assault). Anonymous, individual-level data are the most useful format to receive the data, since they allow more detailed analyses and potentially more useful application of findings. However, in some local authorities, health data are shared initially with one partner at an anonymous, individual-level (CSP or data sharing partner such as TIIG⁵), before this partner analyses, aggregates and shares the data with other local partners.

Who will be responsible for anonymising the data before it is shared?
Data could be fully anonymised by health services before they are shared with local partners. However, in some local authorities, partially anonymous A&E data (e.g. with patient names and addresses removed) are shared initially with one partner (e.g. a data sharing partner or the CSP), who then fully anonymises the data (e.g. converts date of birth into an age group) before they are shared further.

What frequency is the data needed/able to be extracted and shared?
The more frequently the data are shared, the more use they have in addressing current issues with violent behaviour. In some LAs, both A&E and ambulance service data are shared on a monthly basis or less (fortnightly for some A&E datasets). A monthly timeframe is recommended by the CEM when sharing A&E data⁵. However, police forces may find that fortnightly data can inform operational activity more usefully than monthly data. Discussions should take place around how often health data will be used by local partners to identify the optimal sharing period.

What process will be used to share the data?
A method of securely transferring the data to local partners needs to be identified. Where the data being transferred are intended only for one partner (e.g. one partner receives, analyses and aggregates the data before sharing with other local partners), online drop boxes and secure e-mail connections (e.g. a Government Connect Secure Extranet [GCSX] accounts) have been successfully used. An online drop box offers a secure way of transferring data where secure email is not available. Here, a partner is registered with a username and password. Documents are uploaded to an area specific to that username, and can be accessed by another individual using the same log-in details. Where the data being transferred are intended for more than one partner, it may be easier to use software such as Microsoft SharePoint⁶. Used successfully in some LAs, Sharepoint allows local partners to be registered with usernames and passwords. Documents can be uploaded from the data provider onto a central hub, accessible online only by registered users.

Step 3: Consider how data sharing will be monitored and evaluated

Once the data sharing begins, it will be important to be able to monitor how well the process is working. This will allow a clear indication of where improvements can be made, if needed. Local partners should agree on what a successful data sharing process would look like and how this could

⁵ TIIG (Trauma and Injury Intelligence Group), based at the Centre for Public Health, Liverpool John Moores University, is an injury surveillance system in the North West of England that routinely collects data on intentional and unintentional injuries from a range of local agencies including A&Es. For further information see http://www.tiig.info/

⁶ www.discoversharepoint.com/#store_sync_and_share_your_content
be monitored. This could include some of the six factors identified at the beginning of this chapter, for instance regular training of A&E staff and regular feedback to A&E staff on data use. Targets could also be set for data collection quality and completeness, particularly if additional fields have been requested. Here, key milestones could be identified e.g. 50% completion rate in year one, 75% in year two etc.

**Step 4: Develop a data sharing agreement between health services and local partners**

Where anonymous, individual-level data are being shared, it is best practice to develop data sharing agreements between health services and local partners. These documents will govern how the data should be shared, used and protected. An agreement document can outline to all partners the decisions made to the questions in Step 2, as well as specify what the data can and cannot be used for (see Section 4: Managing and handling health data for more information). Where aggregated data are being shared, CEM guidance for A&E data sharing suggests that a data sharing agreement is not needed\(^5\). However, a data sharing agreement may still be useful here in ensuring that data are stored and published in a manner that protects the individuals it relates to.

**Step 5: Use the health data to inform violence prevention activities**

Partners should explore how the health data can best be used to inform local violence prevention activities (see Section 2: Health data sources and their uses and Appendix 3) and begin utilising the data. It is important to regularly record how the data is being fed into prevention activities to help keep health staff informed (see Step 6). Ideally, any prevention activities should be evaluated (using health and other data) to increase understanding of what works at a local level in reducing violence.

**Step 6: Set up regular meetings between local partners (e.g. every quarter)**

Once relationships are established, it is important for partners (or a sub-group of partners) to meet on a regular basis to: maintain connections; introduce role replacements into the partnerships; identify and overcome any issues with data collection and/or sharing; and update health staff on how the data are being used by local partners. Ideally, updates should include any outcomes of prevention activity in terms of violence levels to ensure health staff understand the value of collecting assault information and maintain motivation for data collection.

For the collection of additional A&E data fields, training sessions for A&E staff responsible for collecting additional data items have been useful in A&Es that have set up successful data sharing systems. Training sessions, run by A&E managers and local partners, can enable A&E staff to understand the importance of collecting data in terms of local violence prevention, and develop skills on how to ask and record questions onto the system accurately and consistently. In some A&Es, protocols have been drawn up to help A&E staff collect data. Here, where patients are unwilling or unable to provide the information at A&E reception, a note is left on the system for the A&E speciality nurse, who then collates information from other sources such as the clinical notes.
Additional information on data sharing is available from the Department of Health document *Information sharing to tackle violence: guidance for community safety partnerships on engaging with the NHS*\(^\text{19}\).

**Tip:** Include local partners in initial training sessions so that reception and other A&E staff can gain a good understanding of the work that is conducted for violence prevention in the local area and how the collected data will feed into this.
**Box 10: Setting up a system to share A&E data at the Royal Albert Edward Infirmary (RAEI), Wigan**

**Initial meetings**
In Wigan, the RAEI began sharing A&E data with local partners in 2010. Meetings were held between health and criminal justice agencies to assess the feasibility of setting up a Greater Manchester-based injury surveillance system, led by TIIG. Following these meetings, TIIG engaged with the RAEI and other Greater Manchester A&Es to highlight the benefits of data sharing and to discuss how data could be shared. An information sharing protocol was developed that governed the exchange of data between A&Es, TIIG and local agencies.

**Collecting additional assault data**
Initially, only basic data (core data, see Section 2: Health data sources and their uses) on assaults/injuries were shared with local partners. However, meetings were held between the A&E and TIIG to discuss updating the existing IT system with additional fields on violence and alcohol consumption. These included the fields recommended by the CEM. In 2011, the IT system at the RAEI was updated to include the extra fields; conducted as part of the regular service development of the IT system at no additional cost.

**A&E staff training sessions**
The additional questions are asked initially at A&E reception. Staff received training on: the information required for each question; where the fields were located on the system; and how the data would be used within crime and violence prevention initiatives. Training was later extended to emergency nurse practitioners, advanced nurse practitioners, consultants and junior doctors. This was to enable a further opportunity to collect the data if it could not be collected during the booking in process (e.g. because of a lack of privacy within the reception area).

**The data sharing process**
Assault data are sent from the A&E to TIIG on a monthly basis using a secure on-line drop box and subsequently cleaned by TIIG. TIIG share the data on a monthly basis with New Economy, a Manchester-based company that is owned by the 10 local authorities in Greater Manchester and supports work on A&E data sharing and violence prevention. New Economy uploads the data to an online SharePoint-based portal, which local partners can access using a password. Other information is shared within this portal, such as data from the fire and rescue service, police and the ambulance service.
Box 11: Setting up a system to share A&E data at King’s College Hospital A&E, Lambeth

Initial meetings
King’s College Hospital A&E began regularly sharing A&E data with local partners in 2009, initially as part of the Home Office-led Tackling Knives Action Programme (TKAP). Initial discussions were held between the A&E and the public health team in Lambeth about which data fields would be useful for local violence prevention (including CEM-recommended data) and how these fields could best be shared with public health and other local partners.

Collecting additional assault data
Recognising the value of collecting the CEM-recommended assault data at the A&E, the IT system at King’s College Hospital A&E was adapted to incorporate the location of assault and the mode of injury (e.g. blunt object, body part, knife). The cost of updating the IT system was covered through a Home Office grant via the TKAP project.

Training sessions for A&E staff
The assault data are usually collected by reception staff (location of incident) and a triage nurse (mode of injury/how the injury occurred). However, where it is not possible to collect information at these points, the questions are asked by nursing and customer care officers later in the patient journey through the A&E. Initial training was provided to A&E staff, that included collecting and recording the additional data and how the data would feed into wider public health and violence initiatives within the borough.

The data sharing process
Anonymised, individual-level data are shared on a monthly basis with Lambeth CSP and public health team. Data are transferred in a password protected Excel spread sheet via secure email (to a GCSX [Government Connect Secure Extranet] account). The CSP analyse the data and share the output via secure email with additional partners.

TKAP was a Home Office funded project that worked with a number of police force areas across England and Wales to reduce the number of teenagers killed or seriously wounded by knives.
4. Managing and handling health data

With any sharing of anonymised health data, there is a legal responsibility to safeguard those data and the individuals they refer to. This section presents some of the issues that need to be considered when setting up data sharing systems to ensure that data are adequately and legally protected (Box 12).

The legal framework

The main piece of legislation governing the collection, use and storage of personal data is the Data Protection Act, 1998. Although fully anonymised data is not regarded as personal data, consideration should still be given to the rules of the Act, which specify that data should be:

- Processed fairly and lawfully;
- Obtained only for specified and lawful purposes;
- Adequate, relevant and not excessive in relation to the specified purposes;
- Kept only for as long as necessary;
- Processed in accordance with an individual’s data protection rights;
- Protected against unauthorised or unlawful use, accidental loss or damage; and
- Not transferred outside the UK unless there is an adequate level of protection.

The Common Law Duty of Confidentiality is also important to consider when sharing personal data. This requires NHS staff to ensure that there is a legal basis for sharing confidential personal data. In most cases this will mean that explicit patient consent is required. Confidentiality can also be overridden or set aside by legislation or by a court order. In some cases confidentiality can be breached in the public interest (e.g. to support the investigation of a serious crime).

There is a range of other legislation relevant to data sharing, which set out the power of public authorities in sharing data and their responsibilities in protecting it. This includes:

- **Crime and Disorder Act 1998, Section 115**: an Act making provision for preventing crime and disorder. Section 115 enables information to be shared between relevant authorities where it is necessary to implement the provisions of the Act;
- **The Human Rights Act 1998**: an Act ensuring the fundamental rights and freedoms of individuals as specified under the European Convention on Human Rights. Under the Act, everyone has a right to respect for his private and family life, his home and his correspondence;
- **The Local Government Act 2000**: an Act that provides power to local authorities to share data if this is likely to achieve the promotion or improvement of the economic, social or environmental well-being of their area;
- **The Freedom of Information Act 2000**: an Act providing public access to certain recorded information (e.g. printed documents, computer files) held by public authorities; and,
- **Crime and Disorder Regulations 2007**: regulations that place a duty on police forces, fire and rescue authorities, local authorities and primary care trusts to share depersonalised information held in electronic form.
Ensuring data protection

Some of the issues that need to be considered to ensure data protection include:

Secure transfer of data

Data should be transferred between health services and specified local partners securely using a method that protects against unauthorised access and use. This could include for instance use of a secure drop box, secure e-mail such as NHSmail (a national email service available to NHS staff) or a secure network such as GCSX (Government Connect Secure Extranet).

Ensuring data anonymity

The data requested from health services should be as fully anonymised as possible. This will mean for instance sharing patients’ ages or age groups rather than their dates of birth, and a unique identifier rather than NHS number. If data are provided from health services in aggregated form, anonymity will not be an issue. However, it may be easier for health services and more useful to local partners if anonymised individual-level data are provided to one partner agency first (e.g. the CSP). That agency would then have responsibility for aggregating the data in the most useful format and sharing it in aggregated form with other local partners.

A patient’s residential area can be a useful piece of information to help target violence prevention initiatives within at-risk communities (see Appendix 3, Example 3). Here, full postcodes can be converted to a LSOA code using a look-up table. For local A&E data, it may be easier for the A&E to provide partially anonymised data to one partner agency (excluding names, addresses and dates of birth but including full postcode). This agency would then be responsible for linking the postcode data to LSOA and subsequently deleting the postcode information from the file, thus fully anonymising the data.

NHS organisations need to be sure that the data they disclose cannot be used – either directly or indirectly - to identify individuals.

Protecting data confidentiality

Every partner intending to access health data should be responsible for ensuring that the data are stored securely and confidentially. Data should be stored on secure computer networks, password protected and only accessible by specified individuals within those partner agencies. Any hard copies of data should be housed in a locked cabinet in an alarmed office. Data must not be stored outside the specified agencies, nor within online storage. If anonymised individual-level data are provided to one agency by health services, access should be restricted to specified data controllers within that agency. Furthermore, requests for any individual-level data by other partners should be authorised by health service data providers before sharing.

Publishing data

Any intentions to publish shared health data need to ensure patient anonymity. This means that data should only be published in aggregated form, with any numbers lower than five being suppressed (e.g. “<5”). The time frame covered by aggregated data should be carefully considered,
since small time frames may allow identification of individuals, particularly if information such as weapon is also included (e.g. the number of knife/gun injuries that occurred within a specific week).

**The development of data sharing agreements**

Where data sharing exists, it is best practice to develop a data sharing agreement between health services and local partners. Such a document clearly specifies how data will be provided to local partners (e.g. the format and method of transfer) and how the data will be securely stored and used. Signed by all partners, it protects against the mishandling or misuse of health data. In some cases (e.g. where health services are sharing aggregated data only and there is therefore no risk of patient identification), data sharing agreements are not always deemed necessary. However, even in these cases, a data sharing agreement can be useful for all partners in ensuring that data are stored and published in a manner that protects the individuals it relates to. The information contained in this section should form the basis of data sharing agreements put into place between health services and local partners.

**Box 12: A short guide to the contents of data sharing agreements**

The purpose of a data sharing agreement is to document to all parties the purpose of data sharing, the data that are being shared and how the data are being used. The following items are typically found in a data sharing agreement, although additional items may be required depending on individual projects:

1. Details of the organisation/s requesting data and the information requested.
2. The purpose of the data sharing agreement, including intended use of the data.
3. The legal framework: instruments and legal principles that govern the exchange of information between agencies (see page 19).
4. Data sharing principles, e.g. who the data will be shared with, how the data will be transferred across organisations, how the data will flow between organisations, who will be responsible for ensuring the quality of data, how the data will be stored, how the data or intelligence from the data will be disseminated/published, who will have access to the data, how long the data will be stored for, and how data confidentiality will be ensured.
5. Contact details of data controllers (staff in each organisation that determine the purpose for which, and the manner in which, information will be processed).

**Further resources on managing and handling health data**


References


Appendices

Appendix 1: Background to health data sharing

Much of the current policy and work around health data sharing and use within local violence prevention focuses on A&E data. The impetus for this was borne out of evidence from the “Cardiff Model” of A&E data sharing\(^{20}\), which was first developed in the late 1990s. Based in an A&E in Cardiff, reception staff collected a number of additional pieces of information from assault patients when they first registered at the A&E, which included: the assault location, the weapon used, and the day/time of assault. The data collected were anonymised, aggregated by staff within the A&E, and shared on a monthly basis with a crime analyst from a local multi-agency violence prevention group (a partnership created in 1997 that included representatives from the local authority, the police and the local A&E\(^{20}\)). The crime analyst combined the data with that from the police, creating summaries of the weapons used and the type of violence, identifying violence hotspots.

The resulting intelligence allowed the partnership to implement a number of strategies to address violence in Cardiff. For instance, the combined data informed: changes to police patrols, the relocation of police resources at high-risk times (weekend nights) from the city suburbs to the city centre, and the targeting of police resources at problematic nightlife venues\(^{21}\). Additional interventions, supported through the combined data, included: the pedestrianisation of entertainment areas where nightlife venues were concentrated, mandatory use of plastic glassware in certain nightlife venues, and changes to late night public transport services\(^{21,22}\). The collection and sharing of the additional A&E data, and the subsequent strategies it informed, were associated with reductions in levels of violence over the next four years, as measured by hospital admissions and police records of wounding and assault\(^{21}\). Reductions in violence have also been reported where the Cardiff model has been implemented in other areas of the UK (e.g. Cambridge\(^{23}\)), and where the collection, sharing and use of similar A&E data fields has been instigated (e.g. Wirral\(^{9}\)).
Appendix 2: Optimising the use of NHS data in local violence prevention and measuring its impact on violence

*Optimising the use of NHS data in local violence prevention and measuring its impact on violence* is a three year research project led by the Centre for Public Health, Liverpool John Moores University, and funded by the Department of Health. The project aims to identify and support the optimum use of NHS data in local violence prevention, and to develop evidence on the impacts of data sharing on violence. The project focuses on non-identifiable health data including A&E attendances, hospital admissions and ambulance call-outs. These datasets have been analysed to assess their applicability in violence prevention at operational and strategic levels. In nine study sites across the North West of England and London, researchers have used these datasets to produce local violence profiles and are subsequently supporting partners in using the data for violence prevention. The project aims to expand the evidence base for sharing health data through detailed exploration/analyses of data sharing in study sites.
Appendix 3: Examples of health data analyses

Example 1: Using health data to identify trends in assaults in Wirral


Fields used: Date of presentation to the A&E; date of admission to hospital.

Data format and analysis: The date of presentation to the A&E and the date of admission to hospital were converted to year of presentation/admission. The total numbers of presentations/admissions for assault were then aggregated by year of assault (Table A1) and presented on a line graph (Figure A1). The table and graph show a reduction in the numbers of patients presenting to the A&E for assault between 2009/10 and 2012/13, but fluctuating levels of hospital admissions for assault over the same time period.

With potential differences in population levels in Wirral local authority between 2009/10 and 2012/13, it is often considered more accurate to convert the number of presentations/admissions for assault into rates per population (e.g. the rate per 1,000 population). This would be feasible for hospital admissions data, which includes all patients resident in Wirral local authority. However, it would not be as meaningful for Wirral’s local A&E data. This is because patients resident in Wirral local authority may attend hospitals in neighbouring areas, whilst patients resident in other areas may travel to the Wirral for treatment.

Additional information: It is also possible to use ambulance service data to examine trends in call-outs for assault. Ambulance service data has not been used here due to uncertainties in the Wirral datasets over the four year period.

Table A1: Number of A&E presentations for assault and hospital admissions for assault, 2009/10 to 2012/13

<table>
<thead>
<tr>
<th>Data source</th>
<th>2009/10</th>
<th>2010/11</th>
<th>2011/12</th>
<th>2012/13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local A&amp;E</td>
<td>2035</td>
<td>1616</td>
<td>1591</td>
<td>1435</td>
</tr>
<tr>
<td>Hospital admissions</td>
<td>370</td>
<td>409</td>
<td>321</td>
<td>357</td>
</tr>
</tbody>
</table>
Example 2: Using health data to identify when assaults are most likely to occur in Preston


Fields used: Date and time of ambulance call-outs; date and time of presentation to the A&E; and date and time of assault (collected through the A&E data).

Data format and analysis: The dates and times of call-outs/attendances/assaults were converted to week day and time groups (spanning two hours) respectively. These conversions enabled easier analysis and interpretation of the data. The total numbers of call-outs/attendances/assaults were then aggregated by week day and separately by time group. Figures were converted into percentages to allow comparisons to be made more easily between data sources (Tables A2 and A3), and graphed (Figures A2 and A3). Data from 2012/13 were used for date/time of assault since this year contained the most complete data. The data suggest that assaults were most likely to take place between the hours of 8pm and 4am and on Saturdays and Sundays (largely reflecting Friday and Saturday evenings).

Table A2: Numbers (and percentages) of call-outs/attendances/assaults by day of week, 2010/11-2012/13 (2012/13 for A&E assault time)

<table>
<thead>
<tr>
<th>Data source</th>
<th>Total</th>
<th>Sun</th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thur</th>
<th>Fri</th>
<th>Sat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambulance call-out time</td>
<td>1429</td>
<td>301</td>
<td>143</td>
<td>155</td>
<td>117</td>
<td>125</td>
<td>237</td>
<td>351</td>
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<td>(100%)</td>
<td>(21%)</td>
<td>(10%)</td>
<td>(11%)</td>
<td>(11%)</td>
<td>(8%)</td>
<td>(9%)</td>
<td>(17%)</td>
<td>(25%)</td>
</tr>
<tr>
<td>A&amp;E attendance time</td>
<td>4679</td>
<td>1114</td>
<td>544</td>
<td>526</td>
<td>405</td>
<td>456</td>
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<td>977</td>
</tr>
<tr>
<td>(100%)</td>
<td>(24%)</td>
<td>(12%)</td>
<td>(11%)</td>
<td>(9%)</td>
<td>(10%)</td>
<td>(14%)</td>
<td>(21%)</td>
<td></td>
</tr>
<tr>
<td>A&amp;E assault time</td>
<td>1997</td>
<td>497</td>
<td>178</td>
<td>203</td>
<td>134</td>
<td>208</td>
<td>275</td>
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<td>(10%)</td>
<td>(7%)</td>
<td>(10%)</td>
<td>(14%)</td>
<td>(25%)</td>
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Table A3: Numbers (and percentages) of call-outs/attendances/assaults by time group, 2010/11-2012/13 (2012/13 for A&E assault time)

<table>
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<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Ambulance call-out time</td>
<td>1429</td>
<td>296</td>
<td>244</td>
<td>129</td>
<td>32</td>
<td>24</td>
<td>42</td>
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<td>(5%)</td>
<td>(8%)</td>
<td>(12%)</td>
<td>(15%)</td>
</tr>
<tr>
<td>A&amp;E attendance time</td>
<td>4679</td>
<td>633</td>
<td>447</td>
<td>129</td>
<td>170</td>
<td>291</td>
<td>345</td>
<td>358</td>
<td>322</td>
<td>362</td>
<td>405</td>
<td>524</td>
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<td>(4%)</td>
<td>(6%)</td>
<td>(7%)</td>
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<td>(7%)</td>
<td>(8%)</td>
<td>(9%)</td>
<td>(11%)</td>
<td></td>
</tr>
<tr>
<td>A&amp;E assault time</td>
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<td>192</td>
<td>153</td>
<td>74</td>
<td>12</td>
<td>26</td>
<td>37</td>
<td>43</td>
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<td>(3%)</td>
<td>(5%)</td>
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<td>(5%)</td>
<td>(6%)</td>
<td>(5%)</td>
<td>(9%)</td>
<td>(17%)</td>
</tr>
</tbody>
</table>
Example 3: Using health data to identify at-risk population groups in Hackney

Datasets used: Ambulance service call-outs for assault, 2010/11-2012/13; local A&E (Homerton University Hospital) presentations for assault, 2011/12-2012/13; HES A&E presentations for assault, 2009/10-2011/12 and HES hospital admissions for assault, 2009/10-2011/12 (all latest years available at the time of analysis).

Fields used: Sex and age group (10-year age groups were created).

Data format and analysis: The numbers of call-outs/attendances/hospital admissions for assault were aggregated by sex and then age group. These figures were converted into percentages to allow comparisons to be made between the data sources (Tables A4 and A5), and presented in graphs (Figures A4 and A5). The data suggest that males and those aged 10-39 (particularly those aged 20-29) were most affected by violence.

Table A4: Number (and percentage) of assaults recorded by health sources, by sex (across latest three years available; latest two years for local A&E data)

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Male No.</th>
<th>Female No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambulance call-outs</td>
<td>5332</td>
<td>3327 (62%)</td>
<td>2205 (38%)</td>
</tr>
<tr>
<td>Local A&amp;E attendances</td>
<td>3519</td>
<td>2372 (67%)</td>
<td>1147 (33%)</td>
</tr>
<tr>
<td>HES A&amp;E attendances</td>
<td>3810</td>
<td>2601 (68%)</td>
<td>1209 (32%)</td>
</tr>
<tr>
<td>Hospital admissions</td>
<td>633</td>
<td>526 (83%)</td>
<td>107 (17%)</td>
</tr>
</tbody>
</table>

Table A5: Number (and percentage) of assaults recorded by health sources, by age (across latest three years available; latest two years for local A&E data)

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>0-9</th>
<th>10-19</th>
<th>20-29</th>
<th>30-39</th>
<th>40-49</th>
<th>50-59</th>
<th>60-69</th>
<th>70-79</th>
<th>80+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambulance call-outs</td>
<td>5051</td>
<td>139 (3%)</td>
<td>2205 (14%)</td>
<td>1497 (20%)</td>
<td>1320 (15%)</td>
<td>771 (7%)</td>
<td>369 (3%)</td>
<td>147 (1%)</td>
<td>66 (1%)</td>
<td>50 (1%)</td>
</tr>
<tr>
<td>Local A&amp;E attendances</td>
<td>3515</td>
<td>38 (1%)</td>
<td>1147 (16%)</td>
<td>1151 (33%)</td>
<td>825 (23%)</td>
<td>583 (17%)</td>
<td>256 (7%)</td>
<td>70 (3%)</td>
<td>36 (1%)</td>
<td>8 (&lt;1%)</td>
</tr>
<tr>
<td>HES A&amp;E attendances</td>
<td>3811</td>
<td>16 (&lt;1%)</td>
<td>1209 (22%)</td>
<td>1179 (31%)</td>
<td>804 (21%)</td>
<td>612 (16%)</td>
<td>240 (6%)</td>
<td>85 (2%)</td>
<td>32 (1%)</td>
<td>12 (&lt;1%)</td>
</tr>
<tr>
<td>Hospital admissions</td>
<td>633</td>
<td>5 (1%)</td>
<td>107 (22%)</td>
<td>210 (33%)</td>
<td>115 (18%)</td>
<td>99 (16%)</td>
<td>34 (5%)</td>
<td>18 (3%)</td>
<td>7 (1%)</td>
<td>6 (1%)</td>
</tr>
</tbody>
</table>

Figure A4: Percentage of assault-related incidents by data source, by sex (across latest three years available; latest two years for local A&E data)

Figure A5: Percentage of assault-related incidents by data source, by age group (across latest three years available; latest two years for local A&E data)
Example 4: Using health data to identify at-risk communities in Wigan


Fields used: Lower Super Output Area (LSOA).

Data format and analysis: The total number of attendances/admissions for assault within each dataset was aggregated by LSOA. Amendments were made to some LSOA boundaries following the 2011 consensus (changes were introduced in mid-2011 population data). However, only pre-2011 LSOA boundaries are currently available in the A&E and hospital admissions datasets. Three year population counts for corresponding LSOAs were calculated using population data from the Office for National Statistics. Due to the LSOA boundary changes, only mid-2009 and mid-2010 population data were used to calculate the three year population counts, with mid-2010 data used twice (once for mid-2010 and once as a proxy for mid-2011). The three year populations were therefore calculated as:

\[
\text{Three year pop.} = \text{mid-2009 pop.} + \text{mid-2010 pop.} + \text{mid-2010 pop.}
\]

For each LSOA, the crude rate (CR) per 1,000 population of A&E attendances and of hospital admissions for assault were calculated using the following formula:

\[
CR \text{ per 1,000 population} = \frac{\text{Total number of attendances/admissions}}{\text{Three year population}} \times 1,000
\]

The resulting CRs (examples in Table A6) were mapped using MapInfo software to create a visual presentation of violence risk across the local authority (Figures A6 and A7). This software allows LSOAs to be grouped into quintiles according to the CRs so that higher risk (darker colour) and lower risk (lighter colour) areas can be easily differentiated.

Table A6: Numbers of A&E attendances/hospital admissions and crude rates per 1,000 population for example LSOAs

<table>
<thead>
<tr>
<th>LSOA</th>
<th>HES A&amp;E (number)</th>
<th>CR of A&amp;E attendances per 1,000 population</th>
<th>Hospital admissions (number)</th>
<th>CR of hospital admissions per 1,000 population</th>
</tr>
</thead>
<tbody>
<tr>
<td>E01006213</td>
<td>41</td>
<td>9.1</td>
<td>10</td>
<td>2.2</td>
</tr>
<tr>
<td>E01006214</td>
<td>31</td>
<td>7.8</td>
<td>11</td>
<td>2.8</td>
</tr>
<tr>
<td>E01006215</td>
<td>30</td>
<td>6.4</td>
<td>8</td>
<td>1.7</td>
</tr>
</tbody>
</table>
Example 5: Using health data to identify hotspots for violence in Wirral


Fields used: X and Y co-ordinates. Whilst the ambulance service data provides exact X and Y co-ordinates of call-out locations, the A&E collects free text information about the assault location (e.g. the name of a nightlife venue). Approximate postcodes, and subsequently X and Y co-ordinates, are added to the A&E data by a data sharing partner.

Data format and analysis: For both ambulance service and A&E data, the total numbers of assaults were aggregated by X and Y co-ordinates (not presented here due to very low numbers). Using MapInfo software, the X and Y co-ordinates for each dataset were mapped, allowing any clusters of assaults to be identified. The number of incidents at each X and Y co-ordinate (ranging from 1 to 6) were also added to the map so that larger numbers of incidents in one location were represented by larger marker sizes (Figures A8 and A9). This makes it easier to highlight problematic areas that may need attention.

Additional information: Although it is difficult to identify the exact locations of incidents from the maps presented in Figures A8 and A9, the mapping software allows users to view the data on more detailed ordnance survey maps to gain more information about specific locations.
Example 6: Using health data to identify the circumstances of assaults in Hackney

Datasets used: Local A&E (Homerton University Hospital) attendances for assault, 2011/12 to 2012/13.

Fields used: Weapon used in assault; attacker’s relationship with the victim; and what the assault was related to.

Data format and analysis: The total number of assaults were aggregated by: 1) weapon used in assault, 2) attacker’s relationship with the victim and, 3) what the assault was related to. For fields 1) and 2), these figures were converted into percentages (Tables A7 and A8) and subsequently presented within pie charts (Figures A10 and A11). For field 3), some records contained multiple answers e.g. “alcohol/domestic violence”. Therefore, the number of times each issue was mentioned was noted and percentages calculated for each issue separately (i.e. the percentage of assaults that were related to alcohol; Table A9). The most frequent issues were subsequently presented in a bar chart to aid comparison (Figure A12). The data suggest that most assaults were caused by a body part such as fist or foot. Around half of assaults were carried out by a stranger, and the most frequent issues relating to assaults were domestic violence and alcohol.

Table A7 and Figure A10: Numbers (and percentages) of assaults by weapons used, 2011/12 to 2012/13

<table>
<thead>
<tr>
<th>Assaulted with</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body part</td>
<td>2393 (68%)</td>
</tr>
<tr>
<td>Blunt object</td>
<td>505 (14%)</td>
</tr>
<tr>
<td>Glass/bottle</td>
<td>244 (7%)</td>
</tr>
<tr>
<td>Knife</td>
<td>192 (5%)</td>
</tr>
<tr>
<td>Other</td>
<td>164 (5%)</td>
</tr>
<tr>
<td>Firearm</td>
<td>21 (1%)</td>
</tr>
<tr>
<td>Total</td>
<td>3519 (100%)</td>
</tr>
</tbody>
</table>

Table A8 and Figure A11: Numbers (and percentages) of assaults by attackers’ relationship to victims, 2011/12 to 2012/13

<table>
<thead>
<tr>
<th>Assaulted by</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stranger</td>
<td>1696 (52%)</td>
</tr>
<tr>
<td>Friend/acquaintance</td>
<td>725 (22%)</td>
</tr>
<tr>
<td>Partner/ex-partner</td>
<td>394 (12%)</td>
</tr>
<tr>
<td>Other</td>
<td>229 (12%)</td>
</tr>
<tr>
<td>Family member</td>
<td>211 (6%)</td>
</tr>
<tr>
<td>Total</td>
<td>3255* (100%)</td>
</tr>
</tbody>
</table>

* 264 (8%) unknown and excluded from analysis.

Table A9 and Figure A12: Numbers (and percentages) of assaults by relating issue**, 2011/12 to 2012/13

<table>
<thead>
<tr>
<th>Assault related to</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic violence</td>
<td>587 (17%)</td>
</tr>
<tr>
<td>Alcohol</td>
<td>555 (16%)</td>
</tr>
<tr>
<td>Robbery</td>
<td>312 (9%)</td>
</tr>
<tr>
<td>Gangs</td>
<td>74 (2%)</td>
</tr>
<tr>
<td>Drugs</td>
<td>37 (1%)</td>
</tr>
<tr>
<td>Sexual</td>
<td>32 (1%)</td>
</tr>
<tr>
<td>Hate crime</td>
<td>28 (1%)</td>
</tr>
</tbody>
</table>

** Percentages do not add up to 100 since some records do not state relating issue; some records will include more than one issue.
Disclaimer

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