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**Policing**

## **Injury surveillance: using A&E data for crime reduction**

Guidance for police analysts and practitioners

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The views presented here are solely those of the authors.

## Executive summary

The use of Accident and Emergency (A&E) data for crime reduction is a form of injury surveillance.<sup>1</sup> The Cardiff Model for Violence Prevention is an approach to help police and Community Safety Partnerships (CSPs) make use of A&E data to identify where violent crime is taking place, which in turn allows police to target their resources to reduce violent offending. In particular, the use of A&E data through the Cardiff Model helps police identify violent crime that is unreported to police. A&E data can therefore provide a supplementary measure of violence in an area. Existing evidence on the value of this approach relates to the use of A&E data to help police, CSPs and other agencies identify and intervene in violence relating to city centres and the so-called night-time economy. Data sharing for this purpose is the focus of this guidance.

This guidance is aimed at those interested in violence reduction and who do not currently use A&E data. It is based on the knowledge of practitioners who are currently involved in sharing A&E data, research into the uses of these data in the UK and internationally<sup>2</sup> and expert opinion. It identifies a number of possible uses of A&E data as well as common issues associated with the sharing and use of them.

The main messages from the guidance, which relate to **data collection, data-sharing partnerships** and **using A&E data for crime prevention**, are outlined below. These messages are examined in further detail within the guidance.

### Data Collection

**The basic dataset collected under the Cardiff Model includes the date and time of attendance at A&E, location of assault, and date and time of assault incident.** Additional categories may include for example victim characteristics (age, gender and ethnicity) and location type. A&E datasets can also be collected from multiple A&E departments to offer a more comprehensive picture of violence in a city centre or wider area.

However, **further additional data categories and datasets can represent additional work and diminishing returns.** Certain additional data categories also have known limitations regarding their utility and reliability. Furthermore, the workplace in which data collection takes place should be taken into account when deciding whether to request additional data.

### Data-sharing Partnerships

Experience from practice suggests that **data sharing is more likely to succeed if there is a named individual at the hospital responsible for sending the data to a named individual at the CSP, the police force or potentially a third-party service.** This named individual from the CSP, police or third-party will then be responsible for cleaning the data and preparing analytic products of interest for different partners, such as licensing teams, other analysts in the police force, CSP partnership analysts and area or tactical support commanders.

The Information Commissioner's Office has stated that **A&E data can be shared within the provisions of the Data Protection Act, provided the data are used for crime prevention, not crime detection.** Data sharing for violence prevention undertaken under the aegis of the Cardiff Model must not be confused (or merged) with the process for responding to gun and knife crime, whereby medical staff are expected to inform the police immediately about any patient who presents with an injury following an assault with a gun or knife. This is a different process with a different aim. The vast majority of assaults requiring A&E care are not as a result of knife or gun crime.

Once a data-sharing partnership to collect assault incident data has been established between a police force (or CSP) and relevant A&E departments, the longer-term success of the partnership depends on mutual support and value being given to the work at regular intervals. **Identifying and maintaining a data-sharing champion role within police forces, CSPs and A&E departments can add resilience to partnerships,** while direct and regular feedback to A&E staff reinforces the importance of data collection. Requests for additional data should be made cautiously and where possible, data and analysis should only be shared among relevant partners. Common pitfalls among data-sharing partnerships include viewing 'health' as one entity, using A&E data for unsuitable purposes (mission creep), assuming A&E staff follow a command-and-control culture and undervaluing the data communications process.

## Using A&E Data for Crime Prevention

Basic data on offence type, time, location and victim details can be analysed to **validate or challenge existing knowledge, support police deployments, target resources and support problem-solving.** For example, location data can help to identify hotspot areas for violent assaults, which can inform police resourcing decisions. Scanning of free-text entries in A&E datasets provides an additional opportunity for insight and problem solving.

**A&E data can also be used as an outcome metric for evaluation** of violence reduction initiatives and strategies, such as licensing decisions. These more advanced uses of A&E data generally require analytic skills such as regression modelling, and also need to take into account the limitations of A&E data as a form of evidence.

**The limitations of A&E data include issues around reliability, validity, comprehensiveness and completeness.** Therefore, analysis of A&E data should generally be used alongside other data and information. It is important to ensure appropriate understanding of the data, and in particular to reinforce the notion that such information should be treated as complementary to other available data and used alongside local police knowledge about violence in their area.

The guidance is not exhaustive or comprehensive and practitioners are encouraged to share new and promising practice in this area through the College of Policing and any other available avenues. This guidance is not intended to alter

existing practice where it is already considered effective. Additionally, while the guidance has focused on certain types of analysis based on existing practice and known limitations to the data, the guidance is not intended to discourage potentially innovative uses of A&E data that have not been considered by this review.

## 1. Introduction to the guidance

Police and Community Safety Partnerships (CSPs) can make use of Accident and Emergency (A&E) data to identify where violent crime is taking place. In particular, the use of A&E data helps police identify violent crime that is unreported to police. One study, for example, estimated that at least a quarter of assaults identified by one A&E department had not been recorded by the police.<sup>3</sup>

The Cardiff Model for Violence Prevention is widely accepted as the model for best practice in England and Wales.<sup>4</sup> Since the development of this model in 1996, with the creation of the Cardiff Violence Prevention Group, it has been refined following implementation by police force areas and CSPs in England, Wales and Scotland. The World Health Organisation now promotes the sharing of emergency room data as part of the public health approach to violence prevention, and the value of A&E data for supporting violence prevention initiatives has been repeatedly demonstrated both nationally and internationally.<sup>5</sup> The Cardiff Model approach to A&E data collection and sharing between health, police and other relevant community safety partners offers a framework on which further practice in this area can be built.

To assist police forces in further developing practice related to the analysis of A&E data to support violence prevention initiatives, the College of Policing commissioned researchers at RAND Europe, Addenbrooke's Hospital, Cambridge and the University of Cardiff to develop this guidance. This document should serve as an introduction to the kinds of analyses and initiatives that can be supported by A&E data. It is written primarily for police analysts and other relevant practitioners in forces that are just starting to receive and use A&E data, as well as in forces that are looking to expand or refine the ways in which they analyse and communicate such data. The guidance is written with minimal reference to external sources but a supplementary technical report provides more detail on the literature, data and methods used for the project.

This guidance document is divided into five parts. It provides an introduction to the topic and use of the guidance (Section 1); describes how to understand the datasets (Section 2) and partnerships (Section 3); provides guidelines on maintaining an A&E data-sharing partnership (Section 4); and guidelines on using A&E data for crime prevention (Section 5). A technical report, published separately, outlines the methods used in the production of this guidance, namely a literature review and interviews and a workshop with practitioners.

### Why use A&E data for violence prevention?

The Cardiff Model was developed to support violence prevention initiatives. A&E data sharing has primarily been used to target policing and prevention activities related to city-centre and alcohol-based violence. However, a number of other potential uses have been identified, such as prevention of knife crime, violence in schools, domestic violence and identification of gang-related violence. The use of A&E data to inform interventions intended to reduce these types of crime have not yet been tested and it is not known whether they can be effective; however, these potential uses might be explored helpfully and developed further. Existing evidence relates to the use of A&E data to help police, CSPs and other agencies

identify and intervene in violence relating to city centres and the night-time economy. Accordingly, that is the focus of this guidance.

The principal reason A&E data are useful is that many violent incidents are not known to the police. Victims of violence may not report assaults to the police for a variety of reasons. For example, they may not see the incident as something worth reporting, be afraid of reprisals, not know who assaulted them or not want their own conduct to be scrutinised too closely. A&E data can therefore supplement incomplete intelligence relevant to preventing violence by providing an additional measure and record of violence in an area, unaffected by some of the factors that can affect official crime statistics.

The Cardiff Model approach is designed to increase police capability to identify and target violence hotspots wherever they are located. In city centres, for example, A&E data are used to identify street locations, named licensed premises and other areas such as alleyways and parks where violence occurs. This information can be used to support deployment of police and local authority prevention resources to these locations, to deter and intervene earlier and more frequently.

Alongside enforcement-led initiatives, this type of injury surveillance data can be used to identify opportunities for violence prevention through safety measures, for example, requiring the replacement of glassware with polycarbonate alternatives in premises with higher levels of disorder.<sup>6</sup> Such data can also inform decisions about public transport planning around city-centre locations, such as fast food outlets where large volumes of people may congregate and violence might occur. For example, more frequent bus services in these locations during busy periods may help to alleviate large crowds and reduce the likelihood of violence.<sup>7</sup>

Using A&E data alone cannot generate reductions in violence. However, evaluations have demonstrated that in cities where it is used to inform violence reduction initiatives, it can help to reduce violence, A&E attendances and hospital admissions to a greater extent than in cities where this approach has not been adopted. The cost savings accruing can be substantial. For example, in Cardiff, in 2007, the estimated combined savings to both healthcare and the criminal justice system amounted to almost £7m.<sup>8</sup>

Ensuring the police and CSPs have access to good-quality A&E data is valuable for violence reduction. Beyond that, it is also important that close professional relationships are established between relevant A&E staff and police analysts and officers for these partnerships to have an impact on violence levels. A&E data only have value when they are communicated to appropriate people and used to support initiatives, which requires an ongoing and active partnership.

Additionally, as is reiterated at numerous points in this guidance, this model is not designed to assist police in the investigation of specific offences and suspects.

The Cardiff Model is based on a core dataset that can be collected in the A&E environment and has been shown to be useful for violence prevention. It is possible that the collection of other data items can damage the data-sharing relationship and should be undertaken cautiously until the use of additional data

has been evaluated and found to provide additional value in crime and violence prevention.

## Using the guidance

This guidance is based on existing practitioner knowledge, expert opinion and available research. It identifies a number of possible uses of A&E data as well as common issues associated with the sharing and use of these data. However, the guidance is not exhaustive or comprehensive. Practitioners are encouraged to share new and promising practice in this area with one another through the College of Policing and any other available avenues. This guidance is not intended to alter existing practice where it is already considered effective, nor to limit potentially innovative uses of A&E data that have not been considered by this review.

It is important to understand that, while injury surveillance through A&E data has repeatedly been shown to have value for violence reduction initiatives,<sup>9</sup> **data sharing on its own does not produce results**. Rather, data sharing becomes valuable when it is used to support on-the-ground violence prevention initiatives. In turn, once data have been received, reviewed and analysed they then need to be communicated to the appropriate people. In forces and CSPs that have only just started receiving these data, potential uses may not be entirely clear to all members or partners. As described in the following sections, part of making the most of A&E data involves an ongoing process of raising awareness of this information source, educating partner agencies about the uses to which it can be put and reinforcing these messages with key internal and external partners.

Finally, many of the suggestions in this guidance have not been empirically validated as effective. These guidelines are based on available evidence but it should be understood that this is sometimes anecdotal. Without rigorous evaluation evidence of effectiveness, the initiatives identified here should be seen as potentially valuable approaches to the use of A&E data, not necessarily as best practice in the field of A&E data sharing. The value of certain uses of these data to support violence reduction is a matter of debate. The evidence used to support these claims is referenced in the technical report that accompanies this document.<sup>10</sup>

Where appropriate, debate about the value of certain approaches is highlighted in this document but the guidance avoids being prescriptive about what approaches ought to be considered valuable. Police forces using A&E data are encouraged to share their successes and challenges in A&E data analysis with one another through available channels, such as the Practice Bank on POLKA (<https://polka.pnn.police.uk/en/>)<sup>11</sup> so that a wider body of evidence can be established.

## 2. Understanding the basic dataset

Underpinning the approaches set out in this guidance is A&E injury surveillance data generated under the Cardiff Model.<sup>12</sup> This section briefly reviews what basic A&E datasets look like based on data routinely collected by A&E departments and used in the Cardiff Model.

### **A basic dataset provides an overview of key categories related to assaults**

The core dataset categories have been designed to provide valuable data on assault incidents/victims presenting at A&E departments, without requiring substantial additional work by A&E receptionists or intrusive questioning of victims. The datasets are anonymous in that they do not contain names or full addresses of victims or assailants.

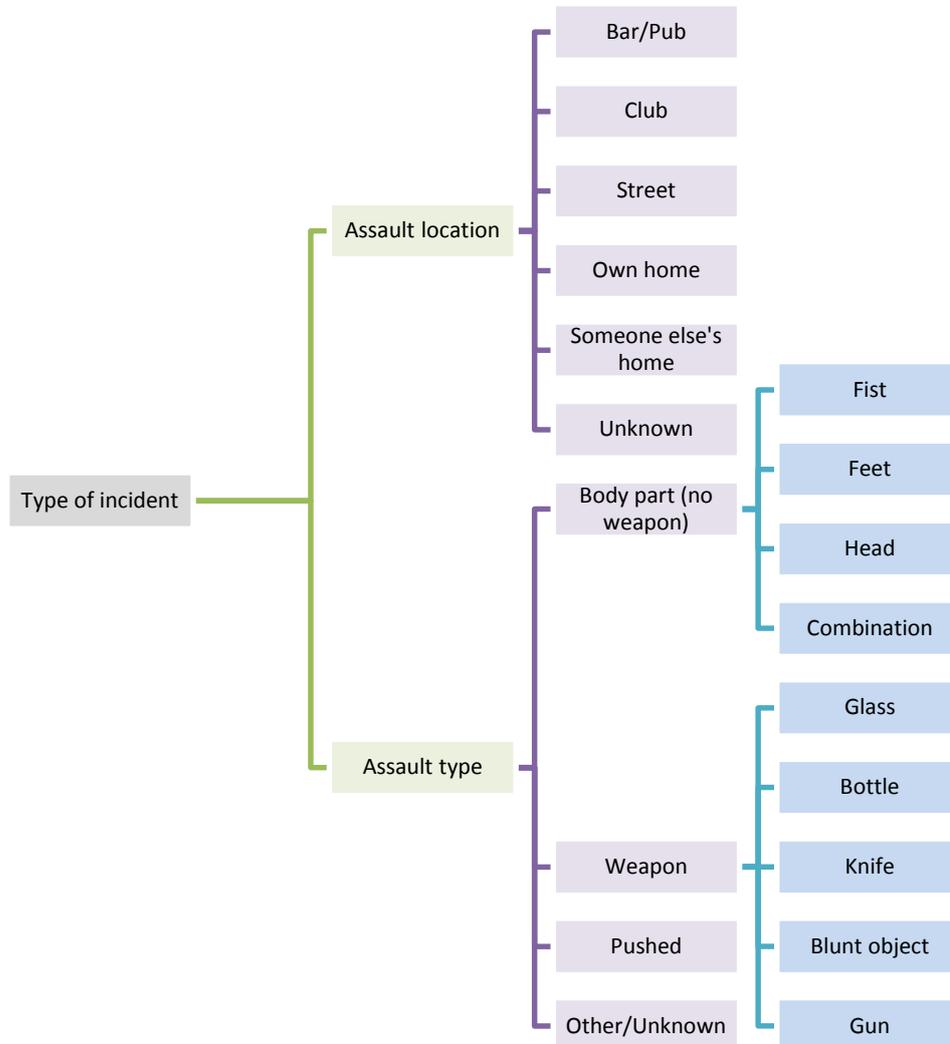
Based on the College of Emergency Medicine (CEM) guidelines, a number of core items form the basis of any dataset. These are outlined in Box 2.1 and the full CEM guidelines are also included in Appendix C of this guidance.

#### **Box 2.1. Core information from 2009 College of Emergency Medicine guidelines**

- Date of attendance at A&E
- Time of attendance at A&E
- Location of assault (as precise as possible, incl. inside/outside nightclub and name of the nightclub if appropriate. Usually collected as free text)
- Date of assault incident
- Time of assault incident

Figure 2.1 is adapted from the College of Emergency Medicine guidelines on A&E data sharing and illustrates how this kind of data might be recorded.

**Figure 2.1. Example of assault type recording process**



While not included in the College of Emergency Medicine guidelines as core categories, some additional categories are commonly collected by A&E departments (see Box 2.2).

**Box 2.2. Common additional categories**

- Gender of victim
- Age of victim
- Ethnicity of victim
- Location type
- Notes/Comments (free text detailing any additional points of interest relating to the assault)

**Collecting additional data categories may be useful but should be weighed against costs and risks to quality**

While the notion of a Cardiff Model dataset suggests a standardised approach, A&E data collection for injury surveillance has been implemented in different ways across separate force areas. This is typically because of the local conditions and parameters of the agreement between forces/CSPs and local A&E departments. In turn, some forces are able to collect categories of data that are not available in other force areas.

As outlined further below, collecting additional data can be detrimental to the quality of the dataset, owing in particular to the environment in which these data are collected. The decision to add further data categories should be taken with due regard to these conditions.

Further additional data categories, their benefits and limitations are set out in Table 2.1.

**Table 2.1. Additional data categories**

<b>Additional category</b>	<b>Description</b>	<b>Added value</b>	<b>Potential limitations</b>
<b>Assault reported to police? (y/n)</b>	Assault victims are asked whether or not they have reported, or will report, the incident to police	Can provide a proxy for levels of unreported violent crime, especially where case matching is impractical	Victims may say they will report to avoid further questions; asking this may make victims feel uneasy
<b>Victim's postcode</b>	The first four digits of the victim's residential postcode are recorded in the dataset (e.g. CB24)	Can allow additional analysis of locations of victims to see if patterns emerge; may identify areas for primary prevention (e.g. early years interventions)	Potential issues with confidentiality of victims, especially in areas with low population density
<b>GIS data</b>	During data cleaning, an analyst adds the northings and eastings of an incident location to the dataset	Allows for quick visualisation of data in map format	Can require substantial additional work, and may have limited return depending on quality of location data
<b>Assailant relationship</b>	Assault victims are asked about their relationship to the assailant	Can allow additional analysis of trends in e.g. domestic violence (DV) or stranger assaults; may help improve support for DV victims in local area	Potential for dishonest responses when friend/family/partner is involved; unclear value for further initiatives around DV; may make victim uneasy
<b>Was alcohol involved? (y/n)</b>	Assault victims are asked, or the receptionist is able to interpret from victim behaviour, whether alcohol was involved in the assault	Allows analysis of proportion of assaults influenced by alcohol and may also help identify irresponsible licensed premises	If asked, may make victims feel they are somehow complicit in their own victimisation; data may result in underestimate as respondents may be dishonest
<b>Number of attackers</b>	Assault victims are asked how many attackers were involved	Can help identify cases and patterns in assaults from multiple attackers	Unclear benefit; estimations of number may be inaccurate where more than one attacker is involved
<b>Gazetteer location*</b>	Data input application allows for gazetteer look-up of addresses	Provides better location data than free-text entry	Expensive to set up and maintain

\*A gazetteer is a geographical index that accompanies maps and provides a descriptive account of a given geographical location.

### **Collecting data from more than one A&E department offers a more comprehensive picture but can involve additional work and diminishing returns**

Some police forces have access to datasets from all A&E departments within their force area, while others restrict data collection to A&E departments serving areas with high levels of violence, such as city centres. Some forces have access to data from minor injuries units and/or Major Trauma Centres. Minor injuries units and Major Trauma Centres<sup>13</sup> are both able to collect Cardiff Model data (and some currently do); both receive patients who may not attend A&E departments, because their injuries are too minor or too severe, respectively. Forces or CSPs may also have agreements with A&E departments in neighbouring force areas, especially where those departments regularly serve residents in the force area.

However, there is some debate among practitioners about the relative value of collecting multiple datasets. On the one hand, more data are generally considered better, insofar as they increase (potential) awareness of previously unknown problem areas, allow for better validation of knowledge and could support better decisions.

On the other hand, violence is generally concentrated in city centres and so forces with less capacity for analysis may want to target their efforts in specific urban A&E departments where relationships can be maintained and data are expected to be most useful. Securing agreement from multiple data providers requires resources to be invested in setting up and maintaining relationships. Forces may experience diminishing returns in seeking to gather additional A&E datasets, especially where these cover low-violence areas. It is also worth remembering that collecting more data requires a greater ongoing investment of time and effort, without which data quality may be reduced. Box 2.3 details some complications of large-scale data collection.

#### **Box 2.3. Complications of rural and large-scale urban A&E data collection**

For some police forces or CSPs a single A&E department may account for a majority of attendances in a force area (or at least the main urban and city-centre area where violence occurs). However, other force areas are served by multiple A&E departments. For example, in Cardiff the University Hospital of Wales provides A&E services for the entire city but in Staffordshire no single A&E department accounts for more than 20 per cent of A&E attendances for the county. Residents of non-metropolitan Staffordshire attend over 14 separate A&E departments, plus minor injuries units.

Similarly, there are 26 relevant A&E trusts serving the population of London. In both Staffordshire and London, most A&E departments have yet to begin collecting Cardiff Model data. Where they do collect them, the datasets they return often differ slightly from one another, requiring additional work by analysts to clean and collate the various data inputs from different A&E departments. These issues can make implementation of whole-force datasets particularly complicated in certain areas. However, even an imperfect dataset can still yield valuable information for violence reduction.

## **A&E staff obligations and working environment present constraints for data collection**

Collection of assault data is just one of a number of activities required of A&E receptionists when speaking to patients on arrival at A&E. First and foremost, it is essential to understand that **A&E staff are under no obligation to collect data about assaults**. Where they do it is invariably in addition to their existing workload.

The core responsibility of A&E staff is to provide prompt medical attention, and where collection of these data in any way inhibits that responsibility, they may simply choose not to collect them. Even where automated intake forms require the collection of these data through mandatory fields and prompts, a receptionist always has the option of entering a null field (e.g. 'n/a') rather than pressing a patient for information when it is impractical to do so.

Similarly, it is important to understand the context in which these data are collected. During busy times – such as Friday and Saturday nights, when many assaults occur – there may simply not be time to record or request all information from each patient. Additionally, newly hired A&E staff may not be clear on the data collection strategy or may not have developed the soft skills required to gather this information from patients in non-intrusive ways.

The 2009 College of Emergency Medicine guidelines recommend that there should be a useful location for an incident recorded in 70 per cent of violent injury cases, recognising that in at least 30 per cent of cases the receptionist will not be able to get these data, for a variety of reasons.<sup>14</sup> Some patients may be reluctant to provide information, for example, if victims fear repercussions from an assailant. Similarly, victims' responses may reflect their perceived level of culpability or liability surrounding an incident and so may change or omit details. Alternatively, they themselves may be unaware of specific details, for example, precisely where they were at the time of the incident.

These limitations to A&E data are accounted for elsewhere in the guidance, in terms of ways in which the nature of the data may influence analysis and subsequent initiatives. While a perfect dataset, without errors or missing fields, may be desirable from an analyst's perspective, it is rarely practicable owing to the environment in which the data are collected. The same issue occurs, of course, with other intelligence data collected by police.

However, this does not mean that data quality issues should not be addressed. It is certainly worthwhile communicating any issues with data quality to A&E partners so that they can try to improve their data returns but this should always be done with sensitivity to the work environment of the receptionists who collect the data. Further notes on communication with A&E partners are included in Section 4.

### **A note on ambulance data**

Ambulance data are increasingly being seen as a potential area for development in data sharing between police and health practitioners. Detailed data on the location of an incident and the reason for the call-out are already collected by ambulance crews/telephone operators as a matter of course. This means that,

unlike the A&E assault dataset, ambulance data might require a relatively small amount of additional work for ambulance trusts to produce and share. Further, as some people seen by ambulance paramedics do not ultimately attend A&E (including victims of assault with minor injuries), ambulance data can provide an additional data source with cases of assault not found in A&E data.

Additionally, location data may be more accurate if an ambulance attends the injured person at the precise location where the violence took place. However, ambulance pick-up points are often some distance from the assault location and ambulance data usually do not distinguish between street violence and violence inside a nightclub or pub, for example. Importantly, the effectiveness of ambulance data for violence prevention purposes has yet to be established.

The potential uses of ambulance data are not explored in this guidance, although this is recognised as a future area for development in injury surveillance for violence prevention. It is worth noting that ambulance data are held by ambulance trusts, which are different organisations from hospitals. Therefore establishing agreements for sharing of ambulance data is not something that can be accessed directly through A&E data-sharing partnerships.<sup>15</sup>

### 3. Understanding data sharing partnerships requires understanding the health system

The NHS is a large and complex organisation. Hospitals are distinct and separate from GP surgeries, psychiatric hospitals and ambulance services. It is important to be focused on A&E **attendances**, rather than **admissions** ('admission' implies admission into an inpatient bed and usually represents a small proportion of assault victims).

The A&E department is a small, pressurised part of the overall hospital. (Most people working in A&E preferred to be called Emergency Department staff working in Emergency Medicine.) There are usually three or four key individuals who need to be involved in setting up effective data sharing:

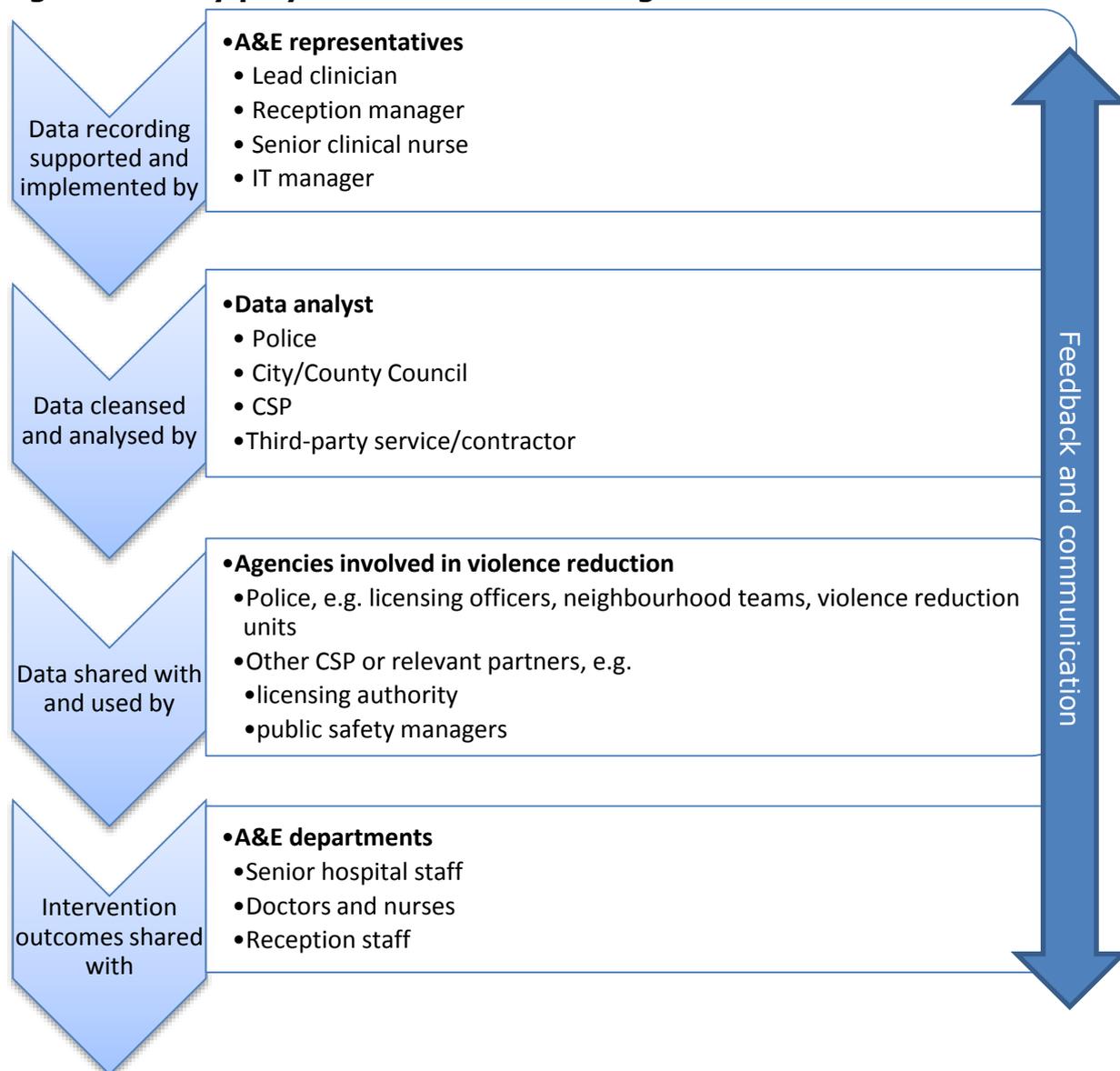
- **The clinical lead or lead clinician.** A senior doctor working in the A&E department with managerial responsibility for emergency medical care. He or she is able to promote, or block, data sharing and provide internal championing.
- **The reception manager.** Has line management responsibility for the receptionists and should have an understanding of any IT problems.
- **The senior clinical nurse.** Has overall responsibility for operational management of an emergency department.
- **The IT Manager.** Should be able to configure the Patient Administration System (PAS) in such a way that automated reports can be generated monthly and sent to a crime analyst. The system used will vary between hospitals and may require local configuration before data can be shared.

Most A&E departments are part of a larger administrative unit but this varies between hospitals. Every hospital has a **Medical Director**, who is a senior doctor responsible for clinical standards. Every hospital also has a **Caldicott Guardian**,<sup>16</sup> who is responsible for data confidentiality. In smaller hospitals the Medical Director is often also the Caldicott Guardian. Caldicott Guardians are responsible for signing an information-sharing agreement (ISA), if one is thought to be necessary. An example ISA is included in Appendix A of this guidance.

Experience from practice suggests that data sharing is more likely to succeed if a named individual at the hospital is responsible for sending the data to a named individual at the CSP, police force or third-party service. This named individual will then be responsible for cleaning the data and potentially preparing analytic products of interest to different partners, such as licensing teams, other analysts in the police force, CSP analysts and area or tactical support commanders.

The specific job of the people who perform these roles will vary between areas but the structure remains fundamentally the same. Figure 3.1 provides a graphic representation of the data-sharing roles.

**Figure 3.1. Key players in A&E data sharing**



### The Data Protection Act 1998

Hospital staff are frequently cautious about sharing data with outside agencies as there are significant financial and administrative penalties attached to breaches of the Data Protection Act 1998. However, the Information Commissioner’s Office has considered the sharing of A&E data and has stated that data can be shared within the provisions of the Data Protection Act 1998, provided the data are used for crime **prevention**, not crime **detection**.

As an additional consideration, very frequent data sharing (for example, on a daily or weekly basis) may risk compromising the anonymity of patients by making individual cases easier to identify to police. This might occur with unique or uncommon cases that the police are called to deal with, which could be identifiable among a small dataset on a single day. In such circumstances, this could also risk a creep towards detection rather than prevention. For these reasons, less frequent sharing (for example, monthly) is encouraged. Datasets are often made available

by A&E departments on a monthly basis but may be provided more or less frequently, depending on the nature of the local arrangement.

### ***Knife and Gun Crime***

Guidance from the General Medical Council<sup>17</sup> states that medical staff are expected to inform the police immediately about any patient who presents with an injury following an assault with a gun or knife. This is a different process with a different aim and must not be confused or merged with the Cardiff Model approach. The vast majority of assaults requiring A&E care are not the result of knife or gun crime.

## 4. Guidelines on maintaining an A&E data-sharing partnership

Once a data-sharing partnership has been established between a police force (or CSP) and relevant A&E departments in or around the force area, the long-term success of the partnership requires support at regular intervals. This section of the guidance outlines ways that police forces can maintain a partnership with their local A&E department that will encourage regular provision of assault data.

### Identifying and maintaining data-sharing champions<sup>18</sup> can add resilience to partnerships

Practitioners consistently identified the importance of appointing a named A&E data-sharing champion with dedicated responsibilities – and available time – to provide ongoing leadership in maintaining partnerships, data quality and analytic outputs from the use of A&E data. The roles from which such champions may be drawn vary across existing partnerships in England and Wales (see Box 4.1).

#### **Box 4.1. A variety of champions**

Those involved in data-sharing partnerships have suggested that a champion can facilitate the buy-in of multiple partners and maintain interest in these kinds of initiative, particularly during the establishment of the partnership as well as during periods of institutional change, such as a change in A&E or police analyst staff.

There is no set model for who should champion these initiatives. Different force areas have, either organically or by design, identified champions from all kinds of violence reduction partners. Champions may be licensing officers, police analysts, senior police officers, CSP or City Council analysts, third-party data collection services, A&E consultants, reception managers or specifically assigned nurses.

It was suggested that, ideally, each relevant partner will have its own internal champion, who will act as a point of contact for other partners as well as continue to promote the collection and use of the data within their own institution.

A champion's role is to align partners with the core purpose of the data collection and to help all parties continue to see its value. This can be done through regular personal contact with key players; providing training to A&E staff, police officers and analysts and CSP partners and staff; and providing institutional memory for the partnership during changes in personnel.

Practitioners report that even those partnerships that have been well established for a number of years still require a champion and users of the data are regularly required to 'sell' others on the value of the data.

A champion can also provide awareness of the causes of any complications in the partnership and act to communicate them. For example, analysts may receive

intermittent periods of poor data returns from specific A&E departments. A champion may have the time to look into such an issue and determine whether it is due to a problem with an A&E IT system, the addition of new staff unfamiliar with data-collection protocols or a broader issue such as reduced staff interest in data sharing.

'You need a [...] clinical champion really, a sort of frontline for the clinician that's there, that understands [A&E data sharing] and wants to make a difference.'

Workshop participant, police officer

### **Direct and regular feedback to A&E staff reinforces the importance of data collection**

The quality of data entry has been thought to decrease over time as initial or periodic bursts of interest are replaced with a lack of clarity on what end(s) the data may be supporting. If specific details of the use of the data are not directly brought to their attention, A&E staff may be unaware of the impact that they have on violence reduction. Regular feedback is seen by practitioners as a tool to keep A&E staff engaged with the process of data collection, which in turn improves data quality. This process of feedback has been referred to as a virtuous cycle. Staff engagement may also be related to their own personal investment in violence issues in an area.

'If you're in a hospital [where] the A&E staff and the reception staff see [violence] as an issue ... they're much more engaged in collecting information, especially if you're completing that virtuous cycle and feeding [successes] back to them.'

Workshop participant, Partnership analyst

Someone in a champion role may act as a vehicle through which the value of data can be communicated to A&E staff. This can also be achieved through regular feedback from officers involved in specific initiatives that have used A&E data, through letters of appreciation or even visits to the A&E supplying the data. Neighbourhood and response officers who regularly attend a specific A&E department may also be made aware of these impacts and be encouraged to communicate them during their visits.

As a matter of course, where A&E data are used in an initiative that achieves a desirable result – such as a reduction in violence in an area or licensed premises – that success should be communicated directly to frontline staff through an appropriate channel.

### **Requests for additional data should be made cautiously, if at all**

Assault incident data of the kind described in this document are only one kind of information that police may request from hospitals. They have a specific purpose – injury surveillance – that can in turn inform violence-prevention initiatives, described further in the next Section 5.

As a cornerstone of the partnerships through which these data are supplied, there is normally an agreement that the data will only be used in anonymous and aggregated form, for the prevention of violence rather than detection of crimes or prosecution of individuals. This in turn reflects the A&E department's responsibility to treat patient confidentiality seriously and to ensure trust between patients and hospital staff.

Notwithstanding the point that data sharing should be about prevention rather than detection, the police may have good reason to want access to data not included in standard partnership datasets, such as the identity of an assailant or victim. In some cases, A&E staff may be willing to share these data if they believe they will be used appropriately and with due regard to patient confidentiality. Where such information is valuable for investigation purposes, police officers and analysts may want to consider requesting non-anonymous data through alternative channels rather than through those responsible for providing anonymous datasets to show an understanding of the boundaries of the partnership. As one interviewee put it:

'It's very tempting for the police [...] when they are dealing with something, they want to know if that person has been to A&E. [...] You have to say well, I don't know, I can't tell you. If you want to know that you have to go to Health and you've got to do a specific request [through Health] etc. And that's what they did in the end, they set up a different sharing protocol with Health in relation to that sort of data. That's where the trust comes in as well, there has got to be trust on both sides in relation to sharing the data'.

Interviewee, partnership analyst

However, requesting additional or non-anonymous data through the data-sharing partnership can create problems such as **mission creep**, where the core purpose of the partnership becomes confused or overtaken by a new purpose. In the short term this may assist a specific investigation but in the longer term it can damage the foundation of the data-sharing arrangement. For example, requests for additional data may suggest to A&E staff that the police intend to use the partnership for detection purposes, or that the partnership is likely to continue to generate additional work for already busy A&E staff.

While it will be down to each force to determine the level of trust and the strength of the working relationship between police and A&E staff, police should be aware of the risks that requests for additional data may pose.

## **Where possible, ensure data and analysis are shared among relevant partners**

Figure 3.1 in Section 3 provided a schematic representation of possible data-sharing partners. As outlined above, it is important that injury surveillance data are used to generate and support initiatives that can have an impact on violence and violent crime. The process by which analysis of these data is translated into on-the-ground activity by police or other public services requires that partners understand what the data can tell them. Ensuring that a dataset has been cleaned and, where possible, that pertinent issues have been highlighted before sharing,

may increase the likelihood that a partner will be able to take action based on the data.

'The best way to use the data is to target who we send it to, target specific issues. So if the issue is licences, target towards licence, if it's schools target towards schools-based officers, if it's domestic violence [then to domestic violence officers] and the wrong way to use the data is just by sending the data to [only] one person.'

Workshop participant, police analyst

## Common pitfalls to avoid in data-sharing partnerships

The following four points provide additional guidance relating to the key pitfalls that have been experienced by police and CSP practitioners when working within A&E partnerships.

1. **Viewing 'health' as one entity.** The NHS is a highly complex organisation. An A&E department is a small but high-profile constituent part of a hospital. Acute hospitals are separate organisations from GP surgeries, psychiatric hospitals and ambulance services. Police forces partnering with health practitioners must recognise this.
2. **Using A&E data for unsuitable purposes (mission creep).** Stakeholders may see many possible potential uses for A&E data. However, these data may not be valuable for certain types of interventions and are never suitable for detection-oriented police work. Attempts to use the data improperly can not only waste time for police officers but can also damage the relationship with A&E staff if they believe the data are being used inappropriately.
3. **Assuming A&E staff follow a command-and-control culture.** There is no obligation or obvious incentive for busy A&E staff to collect and provide data to the police, even where a partnership has been established. Police should approach the relationship with A&E staff with the knowledge that A&E staff have other priorities as well. The best way to ensure that A&E staff continue to provide this information to police is to provide regular positive feedback where the data have been used successfully and constructive suggestions where data quality issues arise.
4. **Undervaluing the data communications process.** Some data-sharing partnerships have faced issues stemming from lack of feedback to A&E staff, as discussed above. Others have failed to make good use of the data, often treating the descriptive analyses – such as creation of tables, maps and so on – as the end-goal of the exercise. It is essential that the data and analytic outputs are ultimately communicated to people who can then use them to generate and support initiatives in violence prevention.

## **5. Guidelines on using A&E data for crime prevention**

In this section, the guidance outlines common strategies for analysis of A&E data and the ways in which different types of analysis can be used to support violence-reduction initiatives.

As noted at the outset, this guidance represents available examples identified in discussion with practitioners and through a review of the existing literature. It is not intended to limit new and innovative uses of A&E data for injury surveillance and violence-reduction initiatives.

A&E data can be best understood as ‘intelligence’ data rather than evidence.<sup>19</sup> Limitations to the validity of the data source (people self-identifying at A&E departments as assault victims) and reliability of the collection method (during reception at an A&E department) mean it is not normally suitable to use injury surveillance data as a standalone source of information. However, in conjunction with other data, particularly police crime data, they can be used to provide a more complete picture of the characteristics of violent crime in an area.

Where relevant, the guidance provides examples of analytic outputs – tables, maps and figures – that have been adapted from police and CSP reports. Rather than reproduce these directly, they have been re-created using a hypothetical dataset to avoid any issues related to the restricted nature of some analytic products.

### **Data can be analysed based on offence, time, location and victim characteristics**

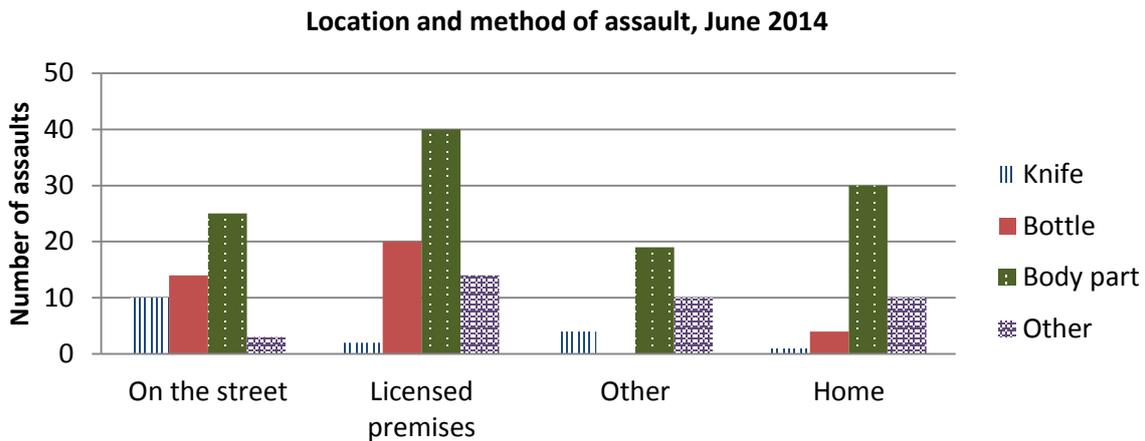
A review of reports provided by forces across England and Wales reveals four basic strands of analysis that will be available from most A&E assault datasets.

#### **Type of assault**

At a basic level, data on incident type can include brief descriptive information about the nature of the complaint, such as where the injury was sustained (head, knee, arm, etc.). It might also include details about what weapon was used to inflict the injury (fist, glass, blunt object, etc.).

These data can be reported on their own to show relative levels of certain types of assaults and injuries presenting at A&E departments in a city centre or force area. They could also be combined with specific location details (see Figure 5.1) or information on the assailant(s) to build up a more detailed account of the nature of the incidents.

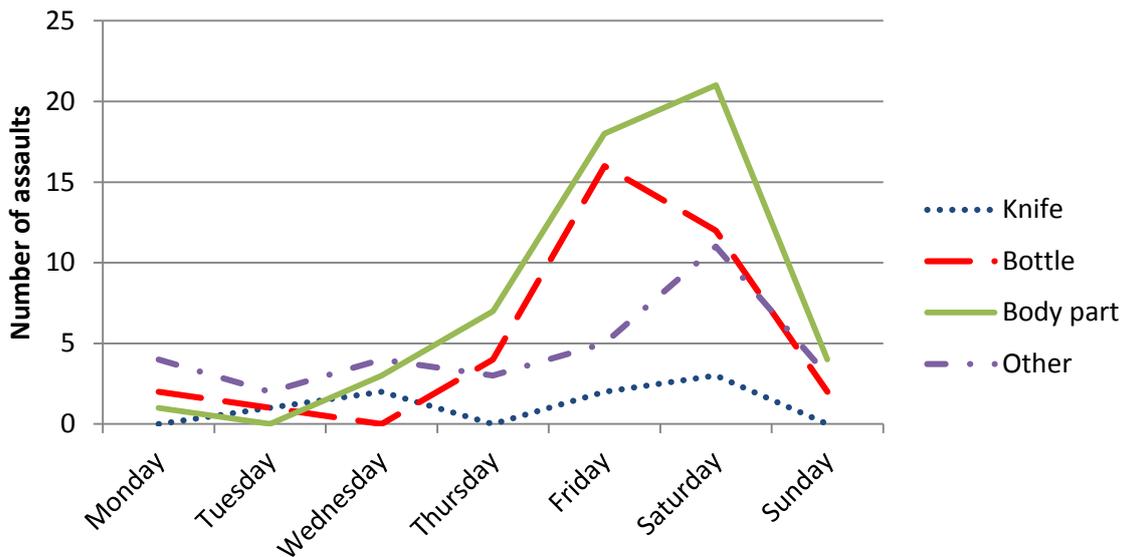
**Figure 5.1. Example of assault and location type combined analysis**



**Time of assault**

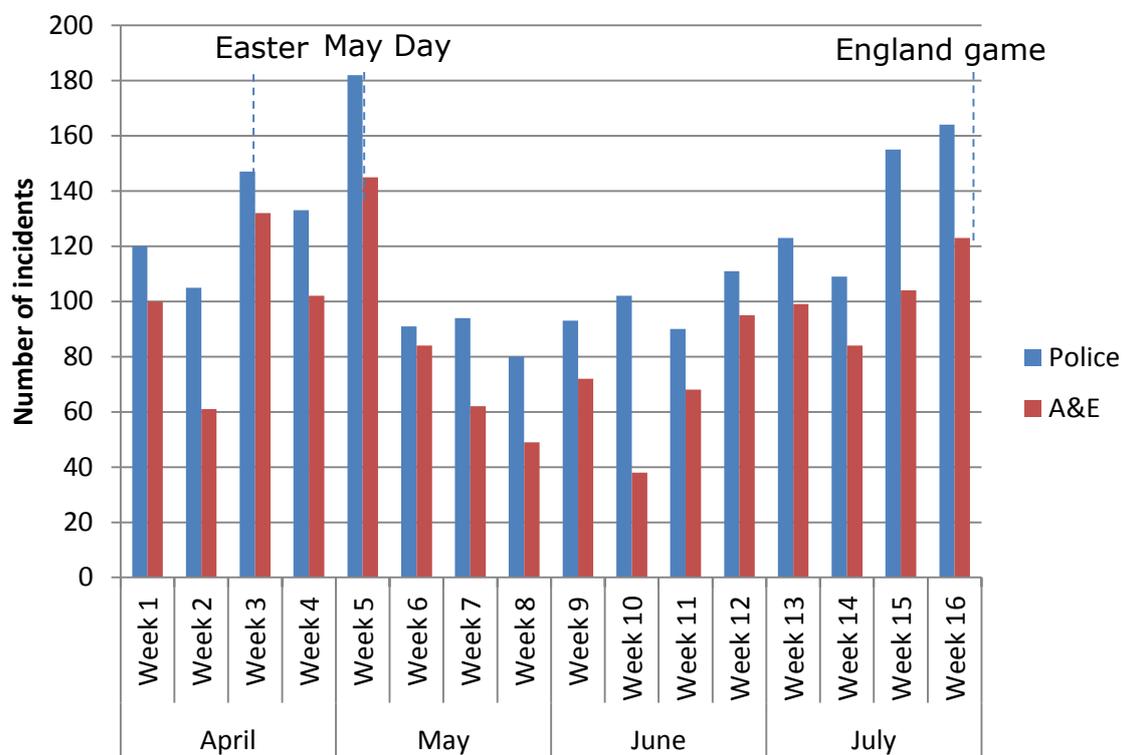
Time of assault data can be analysed to identify patterns of specific kinds of violent offending relating to time of day, week and/or month, also potentially linked to the type of assault (Figure 5.2).

**Figure 5.2. Example of assault type and day combined analysis**



Time of assault data can also be combined with police data to identify potential differences in the datasets, as in Figure 5.3.

**Figure 5.3. Example of time of assault A&E and police data comparative analysis**



In this example (Figure 5.3), police and A&E data have been compared over equivalent time periods. This comparison can show both similarities and differences in reporting/recording trends across the two datasets. This can then be combined with location details to make more informed decisions about deploying police resources to hotspot areas.

Similar to location data, time data can also be visualised in the form of a heat map (Figure 5.4), which can provide a quick visual indication of the days and times with the highest levels of assault. Given that the typical peaks for violence are over the weekend, removing these days and rerunning the heat map would also allow staff to pick up whether there are peaks at other days/times. However, this information should again be thought of as validating what is already known or providing clues about unusual incidents rather than as a standalone data source.

**Figure 5.4. Example of a time heat map**

Hour	Thu	Fri	Sat	Sun	Mon	Tue	Wed
12	6	9	11	18	14	14	9
13	9	12	15	12	10	9	7
14	6	9	10	14	8	12	8
15	11	11	13	16	10	6	9
16	9	11	7	13	17	9	6
17	13	10	10	13	12	16	9
18	15	13	9	14	15	19	9
19	10	12	11	9	12	13	12
20	14	10	12	20	13	12	8
21	17	18	20	22	19	22	27
22	12	22	27	15	15	13	22
23	14	25	26	19	14	13	15
0	12	12	28	45	15	11	8
1	9	19	37	49	7	10	8
2	4	11	34	43	23	11	8
3		17	25	29	10	7	3
4	8	16	24	26	9	6	5
5	5	9	19	31	7	3	5
6	3	7	9	19	4	5	3
7		5	8	5	6	3	4
8	4	3	11	10		6	5
9	5	4	7	5	5	6	7
10	7	9	7	11	7	6	6
11	6	5	12	12	12	7	11
Total assaults	197	279	392	470	264	239	214

**Location of assault**

Location data on where the assault took place can also be recorded by hospital staff. This could include both the general geographical unit (for example, street name or postcode), as well as the specific type of location (for example, licensed premises or the home).

Analysis of these data can then draw out regional or local hotspots (i.e. specific geographic areas with relatively higher incidence of crime). Figure 5.5 is an example of a regional approach within a force area, while Figure 5.6 provides a city-centre hotspot analysis.

Figure 5.5. Example of force-level hotspots map

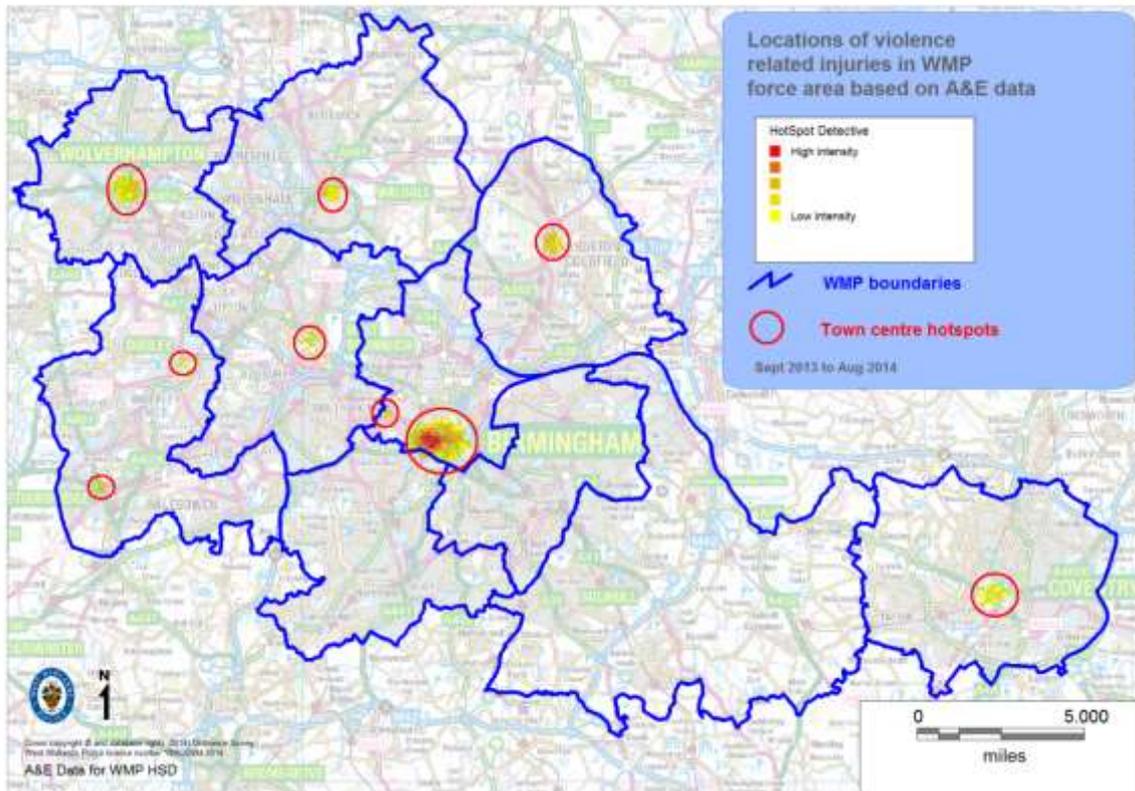
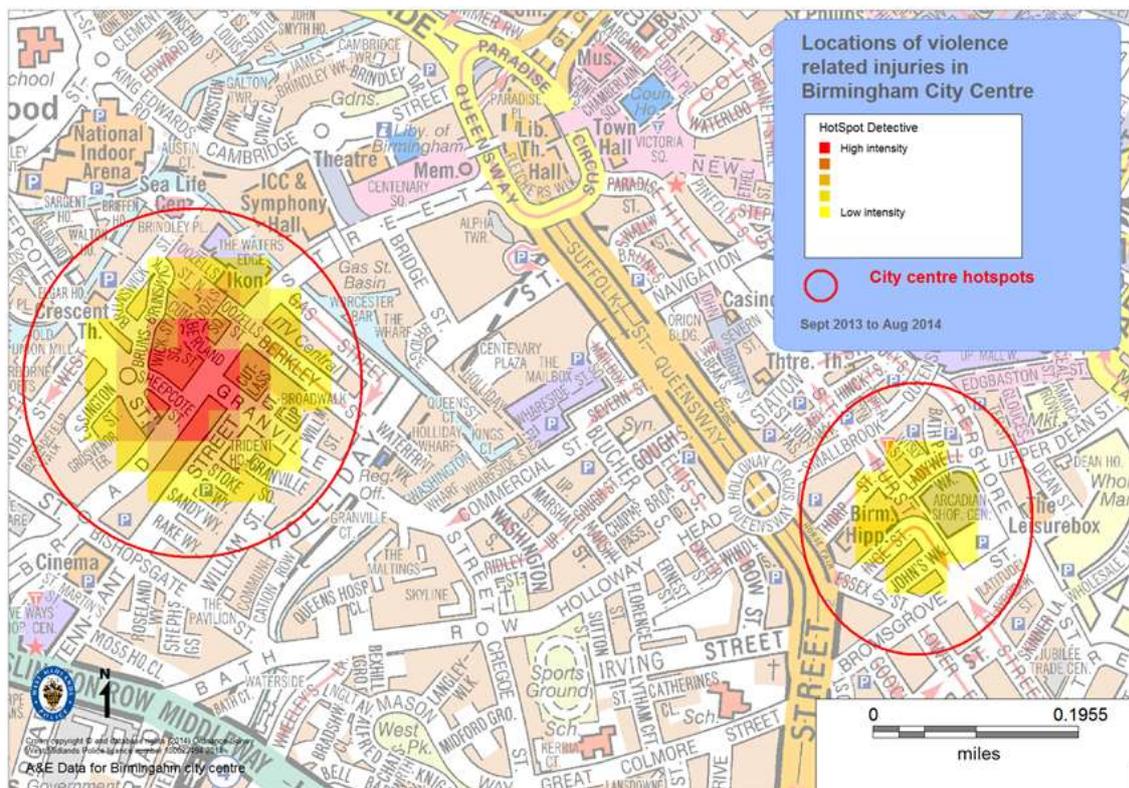
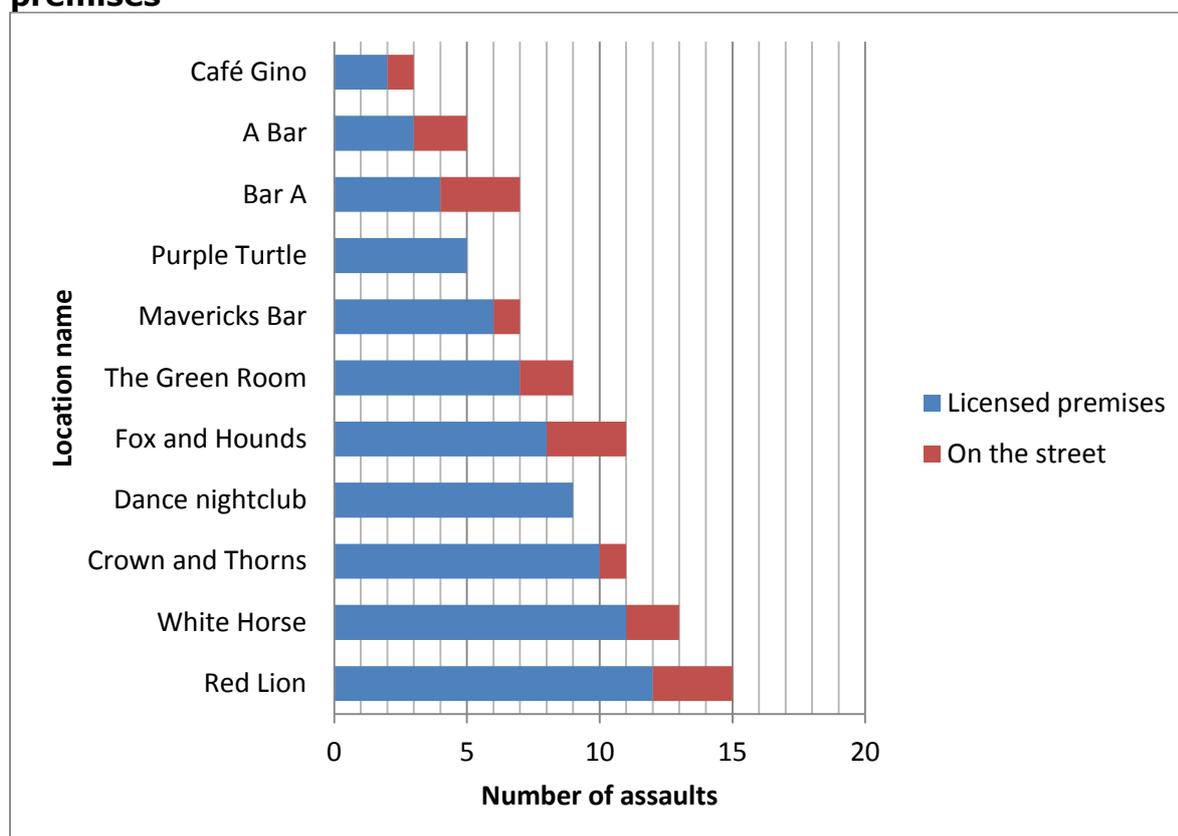


Figure 5.6. Example of city-centre hotspots map



Additionally, location data can be used to provide comparative analysis of relative levels of violence at different licensed premises, as shown in Figure 5.7. This can then be used to support data collected within other analysis approaches such as the 'traffic light' scoring system, which is discussed later in this section.

**Figure 5.7. Example of analysis of assaults in and outside licensed premises**



### ***Force-level versus city-centre analysis***

Depending on available resources, the number of A&E departments involved in serving the force population and the concentration of violence hotspots, a force may be able to collect data on a whole force area, or may choose to target their analyses on data from specific urban A&E departments.

While the guidance earlier identified some of the drawbacks in collecting multiple datasets, it is also worth recognising that many victims of assaults – especially those in city centres and related to the night-time economy – may seek treatment at A&E departments nearer their home (and not necessarily on the same day as the assault took place), which may therefore not be reflected in the local A&E data.

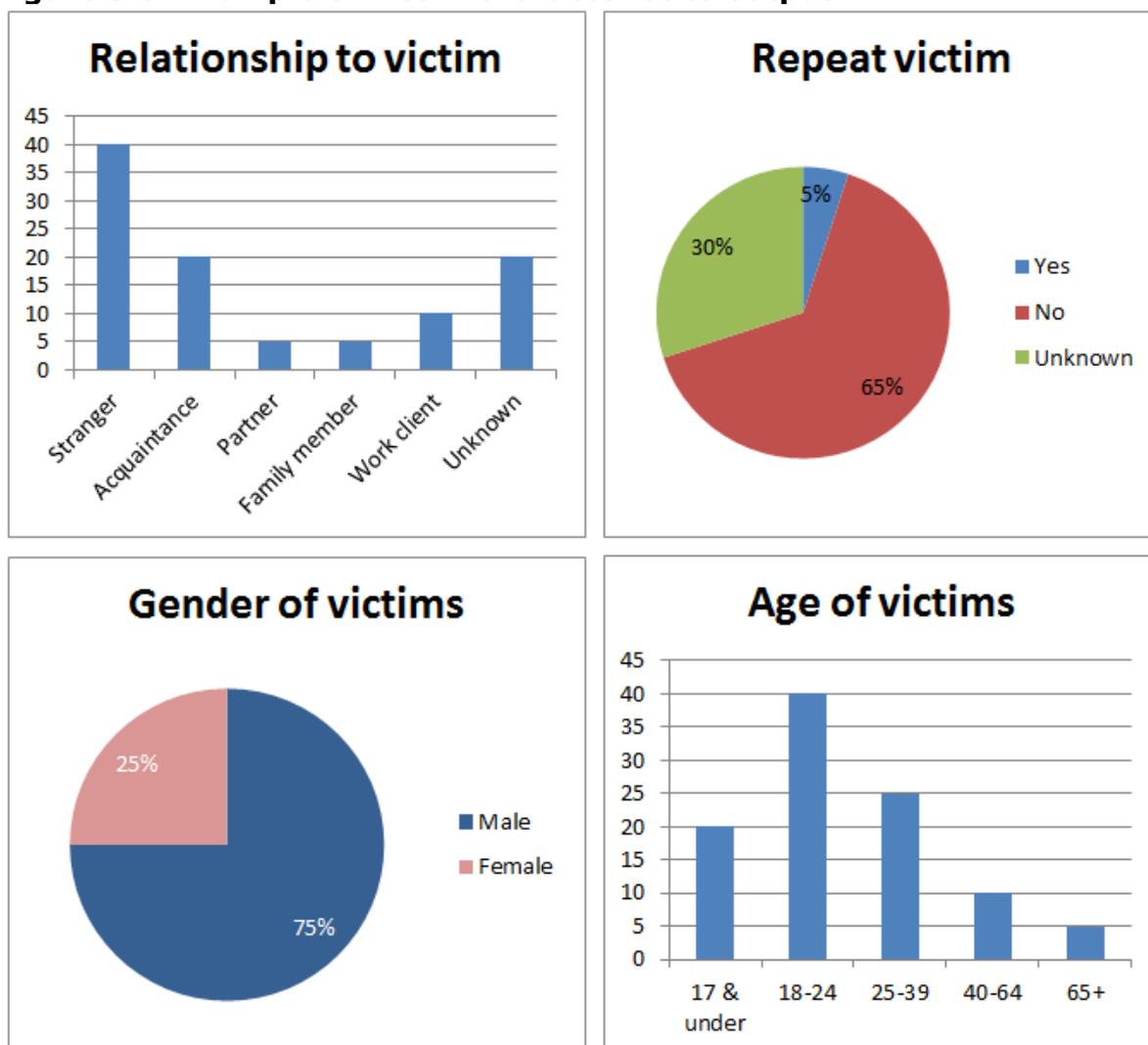
Recognition of this issue is particularly important when using A&E data to identify hotspots: the less comprehensive the dataset, the less certainty there may be about which spots are the hottest in comparative terms.

### Victim characteristics

Data can also be used to record details about the victims. These data can then help police to understand patterns in the data, such as common features of victims in terms of age, gender and whether or not they had previously been victimised (where these data are available in the dataset). Example outputs are provided in Figure 5.8.

It is worth noting that victim characteristics data are almost always incomplete within A&E datasets. This means that outputs using such data should always report on the extent that information is 'unknown' for a given characteristic before any conclusions are drawn.

**Figure 5.8. Example of victim characteristics output**



### Assailant relationship analysis

Victim data analysis may also include information about the relationship of victims to the assailant, as in Figure 5.7. As noted earlier, assailant relationship data may be valuable for identifying victims of domestic violence (DV) or alerting relevant services (including the police) to levels of unreported DV in a local area.

However, these data do have limitations, particularly related to victims' willingness to report partner assault to an A&E receptionist. Some analysts have circumvented this shortcoming by treating all assaults taking place in the home as DV. However, this again raises issues of reliability, although it may nonetheless provide a useful proxy of unreported DV in an area.

## **Analysed data can validate or challenge existing knowledge and support police deployments**

Once A&E data have been analysed in any or all of the ways listed above, they can then be used to support interventions, initiatives and activities by a police force or other partners.

In this section, the guidance outlines identified uses of analysed A&E data for police purposes. Other agencies – such as clinical commissioning groups, city councils and environmental health teams may also use A&E data to support planning and initiatives, for example in developing Joint Strategic Needs Assessments (JSNAs). While these other possible uses are referenced where appropriate, the primary focus of this section is on the ways in which police officers and analysts can directly use these data for violence prevention.

Overall, A&E data are primarily used to:

- **Support licensing activities** by providing additional evidence and data about levels of violence at or near particular licensed establishments.
- **Validate or challenge police knowledge and data** by either confirming what is known or identifying unknown problem areas.
- **Support problem solving** by identifying problems, measuring trends over time to track the impact of a problem, scanning and hotspots analysis.
- **Support deployments and resourcing** through helping to identify places and times where levels of violence are highest.
- **Provide a basis for social marketing campaigns**, particularly around populations such as schoolchildren and potentially victims of domestic violence.
- **Support evaluation** of police strategies and violence reduction initiatives, as an additional metric of violence levels in an area.

Types of analysis and their uses are outlined in Table 5.1 and the following subsections. They have been divided by type of analysis but it should be kept in mind that these analyses will often be used in conjunction with one another and alongside other data.

**Table 5.1. Uses of A&E data analysis**

<b>Analysis</b>	<b>Uses</b>
<b>Assault type</b>	<ul style="list-style-type: none"> <li>• Validation of other data/knowledge</li> <li>• Identify previously unknown areas of concern (e.g. new or uncommon weapon types)</li> <li>• Support trend analysis*</li> </ul>
<b>Time of assault</b>	<ul style="list-style-type: none"> <li>• Validation of other data/knowledge</li> <li>• Support resourcing/deployment decisions</li> <li>• Support trend analysis</li> </ul>
<b>Location of assault</b>	<ul style="list-style-type: none"> <li>• Validation of other data/knowledge</li> <li>• Support resourcing/deployment decisions</li> <li>• Support licensing decisions and enforcement</li> <li>• Support trend analysis</li> </ul>
<b>Victim characteristics</b>	<ul style="list-style-type: none"> <li>• Validation of other data/knowledge</li> <li>• Support social marketing campaigns</li> <li>• Support trend analysis</li> </ul>
<b>Assailant relationship data<sup>20</sup></b>	<ul style="list-style-type: none"> <li>• Validation of other data/knowledge</li> <li>• Identify previously unknown areas of concern (e.g. areas where DV takes place, unexpected victim profiles)</li> <li>• Support social marketing campaigns</li> </ul>
<b>Free-text scan<sup>21</sup></b>	<ul style="list-style-type: none"> <li>• Identify previously unknown areas of concern</li> <li>• Identify unique cases</li> <li>• Identify opportunities for problem solving</li> </ul>
<b>Evaluation</b>	<ul style="list-style-type: none"> <li>• Identify impacts of specific initiatives</li> <li>• Identify impacts of overall policing activities on violence reduction</li> </ul>

\*While A&E data can support existing police data to make more informed trend analyses, on their own they may not be consistent or reliable enough to conduct trend analyses

### **Uses of type of assault data**

**Assault type** data can help the police to identify certain forms of violence and can therefore be valuable in terms of cross-checking with their own records about levels of specific types of assaults. For example, if there are a number of reports of violence-related injuries among young people, this could help to identify or verify potential cases of gang violence, where such inferences can be validated with further evidence from other sources.

Other agencies are also able to draw upon this type of data to help prevent violence. For example, A&E data have been used to highlight injuries that have been inflicted with broken/unbroken glasses in pubs and clubs. This information

has then been used by alcohol and glass retailers to make modifications to glassware through toughening or changing to plastic alternatives, which in turn has resulted in fewer reported injuries of this kind.<sup>22</sup>

### **Uses of time of assault data**

Data regarding the **time** of incidents can be used by the police to confirm or modify their understanding of which times of day, days of the week and months of the year most assaults occur. These data can then be matched against, for example, holiday periods or other regular events, to identify the dates and times with the highest risks of assaults, which can be used to justify or alter resourcing decisions or can be used in combination with location data to target patrols.

### **Uses of location data**

**Location data** can be used to identify concentrations of assaults in specific locations, as shown in the example hotspots maps above. This can help to inform decisions around targeted policing. The value of mapping data can be enhanced by increasing the specificity of the analysis – down to exact locations where possible – as well as by combining them with time and other incident data to inform not only where but also when and how police resources may be best deployed.

The more detailed the location data are, the better police can optimise resources against levels of risk. The case study in Box 5.1 details how these data have been effectively used by the police and other agencies in Jamaica.

#### **Box 5.1. Making the most of location data in Jamaica<sup>23</sup>**

Technology to facilitate accurate and useful data sharing has been used innovatively in Jamaica since 2002. Here, the Jamaica Injury Surveillance System (JISS) is used in seven of the largest government hospitals in Jamaica and creates a risk profile of injured patients, including a record of the location and circumstances of each incident. Integrating the geographic information system (GIS) into JISS enabled the identification of hotspots, which are shared with the Jamaica Constabulary Force so that there is a stronger presence in those areas.

GIS now has a match rate of 80 per cent with the JISS data. The speed of the geocoding is regarded as very important, both in terms of saving time and keeping information up to date, and through GIS the Ministry of Health now has the means to geocode regularly. On some computer systems 12,000 addresses can be geocoded in less than two minutes. This kind of high-level geocoding allows for the effective area targeting of prevention programmes.

### **Location data: licensing decisions**

'One of the big uses of the data is the licensing officers. They are looking at the premises and see whether they can take any proactive action on premises that have been problematic. And I know in the past they have used it as evidence when they wanted to get licenses changed.'

Interviewee, police analyst

Location data, alongside data about assault type, can inform licensing decisions by providing information about the level and severity of unreported violence at pubs and clubs. This can then be combined with analysed police data, such as the 'traffic light' scoring system,<sup>24</sup> to identify the highest-priority establishments for police action. An example of the traffic light system can be found in Appendix B.

Using these data, police licensing officers can approach establishments and work with them to modify their practices; justify the use of plainclothes investigations in and around the establishments; or seek to have licences modified or revoked based on continued problems with violence. This licensing work does not have to be limited to pubs, clubs and bars; as outlined in Box 5.2, these data have also been used to support the refusal of off-licence applications.

### **Box 5.2. Using A&E data for off-licence applications**

In Cambridge City Centre, A&E data have twice been used to inform licensing courts. In both cases retailers had appealed against decisions by the city council to prohibit alcohol sales off-licence in a cumulative impact zone. The area had a homeless shelter, a primary school and a high number of assaults. In both cases, the licensing magistrates found against the retailers and there are now two dry grocery stores in Cambridge. This has had knock-on effects, with other retailers withdrawing appeals or modifying licensing conditions.

Public transport providers may also use these data to inform strategies to reduce violence. For example, increased services at peak hours can relieve crowding in certain concentrated areas (such as bus stops).<sup>25</sup> Similarly, displaying public safety messages in and around key public transport routes where there have been concentrated reports of violence may also be used as a targeted violence-prevention technique.

In another example of how other agencies can use data on time and location of violent incidents, one CSP in London was able to identify a concentrated problem area on a high street between the hours of 11 p.m. and 5 a.m. on weekends. In response, the CSP established a safe zone in the middle of the problem area, which provides a respite for those who have suffered an assault or for people feeling vulnerable. The hub is staffed by medical personnel and private security staff who can deal with minor injuries and help to prevent instances of assaults by diffusing situations and facilitating taxi booking. This CSP initiative would not have been possible without detailed data from local hospitals about the time and location of assaults.

### **Uses of victim characteristics data**

**Victim characteristics** data can be used to identify the types of people most at risk of becoming victims of violence. Collecting information about where victims live can provide a more detailed picture, for example, indicating deprivation.<sup>26</sup> This information can help feed into targeted violence prevention programmes in specific locations.

A&E victim data can be used for a number of other purposes. For example, assault data relating to school-aged children can be used by schools to target social marketing<sup>27</sup> campaigns, for example to educate pupils about certain risks in local areas.

Other, more detailed victim information can be acquired by asking patients further questions, such as their relationship to the assailant and whether they have been victimised in the past. In turn, this can help to identify issues such as domestic violence. These data can be used by hospitals for DV screening processes.<sup>28</sup> These kinds of assailant relationship data, particularly where they identify a case of possible domestic violence, is currently the least-developed area of analysis for A&E data sharing. As identified in Table 2.1, the collection of these kinds of data can potentially cause problems for receptionists in terms of creating unease for the victim and the subsequent initiatives that could be supported through its inclusion in the A&E dataset are unclear.<sup>29</sup>

It is possible that such analysis could inform social marketing campaigns, such as targeted advertising for support services (if data were matched with victim postcode data and certain areas were shown to have higher prevalence of DV). Similar campaigns could be used in city centres if stranger-based assaults were shown to be on the rise. However, these activities have not been tested and therefore their value is unclear at present.

### **Free-text scanning provides an additional opportunity for insight and problem solving**

The forms of analyses outlined above provide quantitative and geographic overviews of violence and assault problems as reflected in A&E data. Viewed in the aggregate, data from A&E departments may simply confirm trends already known to the police. For example, it is reasonably certain that the highest levels of assault will occur on weekend nights in city centres, both in A&E and police data, so the addition of A&E data may do little to influence police resourcing.

However, analysts can also review data for unique cases that would not be revealed by this analysis. An analysis of free-text responses may reveal unexpected issues and areas for problem solving.

#### **Box 5.3. A&E data reveal unexpected source of weapons**

In Brighton, analysts reviewing an A&E dataset noticed that there had been a sudden increase in the number of assaults involving bricks and other debris in one concentrated area in the town centre. The reason for this sudden increase was unknown to the police and other partners of the CSP. Identification of this piece of information in the A&E data led the council to investigate the area and they realised that there was a building site with an uncovered skip next to the nightclub where the assaults were taking place.

The council then contacted the local environmental health team, which ordered the building site to cover its skips, removing the ready supply of unintended weaponry. The CSP subsequently decided that only closed skips could be used

within a certain radius of licensed premises to prevent similar instances of violence.<sup>30</sup>

Depending on the size of dataset(s), the amount of free text entered and time available for this kind of review, an analyst may be able to read through all comments as a matter of course. However, where this is impractical, an alternative strategy may be to use text searches for key terms – for example, looking for indications of gang-related activity, assaults near local colleges or involving students, or types of weapons that have yet to be included in the weapon categories (e.g. fireworks).

## **A&E data could be used in the evaluation of violence-reduction initiatives and strategies**

A&E data can be used to help understand the impact of violence-prevention interventions. One example of this sort of evaluation is related to an intervention undertaken in Cardiff, led by A&E consultants. The intervention focused on violence in two clubs that were identified by A&E data as hotspots for violence. Senior representatives of A&E departments presented the data to the managers of the establishments. They were informed that the A&E department was auditing violence on their premises and that the audit findings would then be shared with local media. This was supplemented by high-profile police intervention outside the premises. Analysis of A&E records six months after the intervention found a statistically significant decline in the number of violent incidents in these licensed premises.<sup>31</sup>

At a higher level of abstraction, another study<sup>32</sup> evaluated the introduction of data sharing as an 'intervention' in its own right. Their research highlights that the sharing of data was associated with a reduction in violence (and associated costs) in Cardiff. In light of the recent and forthcoming introduction of data sharing in other areas throughout the UK, such an analysis could be performed in those areas to see if similar results are achieved.

In this manner, A&E data can be used as a means of evaluating specific violence-reduction initiatives or broader strategies. In each of these cases, A&E data were used as an outcome metric to indicate changes in levels of violence in an area as a result of the intervention. To generate these conclusions and report them with confidence, these researchers employed more advanced statistical analyses, such as regression modelling that took into account geographic or other potential influences on the data.<sup>33</sup>

Where such analytic skills exist within a police force or CSP, analysts may be able to provide evaluation-oriented analyses where a specific research question (e.g. did an initiative work?) can be identified. Analysts should be involved at the start of the development of an intervention. Forces may also wish to develop these skills where they do not currently exist.

However, where these skills are not present, this should not deter analysts from tracking levels of violence to inform police resourcing and using the data to provide additional sources of intelligence for interventions. A&E data have a number of limitations that can often make them less suitable for in-depth analysis as a stand-

alone source of information and more suitable for use as a source of intelligence alongside other available data.

## **The limitations of A&E data generally require them to be used alongside other data and information**

'[The police] treat it like it's normal police data, and it's not, it's intelligence data, it's not crime data and we have to get away from this, and we have to get away from treating it as crime data because of the limitations in it.'

Workshop participant, police analyst

There is debate among practitioners about the suitability of A&E data for certain types of analysis, particularly around their use to identify trends or patterns, as well as to understand levels of unreported crime.

The limitations already outlined within this document can be summarised under three main categories:

- **Reliability:** A&E data are self-report data, recorded in a sometimes hectic environment. Accurate data require an experienced receptionist and a victim willing to disclose information. Even among good datasets, where practice has been established, a benchmark expectation for data quality may be around 70 per cent completeness for location recording.
- **Validity:** A&E data may normally be considered a proxy measure for violence in an area; however, rises and falls in levels of assaults at A&E departments can be the result of many separate or related causes. Changes in data may be the result of reductions in violence but can also arise out of changes in IT systems, the addition of new staff or changes in health care response protocols.
- **Completeness and comprehensiveness:** Certain forces may only require data from one A&E department but for many forces even a reasonably complete picture of A&E attendances related to a single area may require multiple A&E departments. Additionally, victims may be seen by ambulance staff at the location of the assault and will not attend A&E departments.

### ***Limitations to using A&E data to identify trends in violent offending***

A&E data are rarely suitable on their own for analysis of violence trends in an area. Increases or decreases in reported numbers of assault victims presenting at A&E departments, particularly changes in numbers of certain types of assault within the data, may point to genuine changes in the numbers of assaults in an area. However, busy periods for A&E receptionists – such as Saturday nights – often produce worse data (e.g. when receptionists' other duties supersede their data collection responsibilities) and unexpected dips in assaults may occur precisely when numbers should increase.

While A&E data can be usefully analysed to identify trends in violence, analysts and others using them should always seek to triangulate trend analysis with, for

example, police crime data (and potentially ambulance data) before drawing conclusions about overall trends of assault.

### ***Advice on case matching and dark figure analysis***

Many of the kinds of analyses that can be conducted using A&E data can also be conducted on police recorded crime data relating to assault. As such, A&E data are often suitable for some direct comparisons with police data. This type of analysis can provide an indication of the levels of unreported violent crime in an area (the dark figure) and may also help analysts understand the differences between crimes that are reported and crimes that go unreported (e.g. differences in types of crime, areas where crimes take place or victim characteristics). This may point usefully to blind spots in police knowledge of violence in an area, or alternatively validate what is already known about local violent offending.

At a very basic level, it is possible to count up the number of assaults in a given neighbourhood using both sources of data and assess the difference between them. However, this does not inform analysts about which crimes are actually recorded in both sets of data, so the extent of overlap (or lack of overlap) cannot be assessed. To do this, more detailed data, normally including some non-anonymous data such as victim postcode or name, are required. With this information it is then possible to match police data with A&E data to understand which specific A&E assaults have been reported to police and which were previously unknown. However, the time and effort involved in this type of exercise may be considerable, particularly in high-volume areas. This effort might be worthwhile on an annual basis as a benchmarking exercise, but research consistently suggests that the police record no more than 20–30 per cent of the assaults presented to A&E and that this is not influenced by injury severity.<sup>34</sup>

An alternative way of measuring unreported violence is where an A&E department collects data on whether or not an assault was (or will be) reported to police. This can provide a proxy measure of the proportion of assault victims known to police. However, it would be expected that this would be consistently underreported, as victims of assaults would be more likely claim that they did report, when in the end they do not (rather than claiming that they did not report, when in fact they did).

There is certainly value in case-matching and dark figure analysis, since if A&E data can identify *any* unknown violence, they can assist police in addressing it. However, it will be important for those using these data to ensure appropriate understanding of them among relevant partners, in particular to reinforce the notion that they should be treated as complementary to other available data and used alongside local police knowledge about violence in their area.

## 6. Summary

A&E data are a type of injury surveillance data that have been proven to be effective in supporting violence-reduction initiatives. The Cardiff Model approach to A&E data collection and sharing provides a basis from which further practice in this area can be built. Many police forces in England and Wales have implemented A&E data-sharing partnerships based on the Cardiff Model and their experiences have provided the basis for this guidance.

As noted at a number of points throughout the guidance, the collection of A&E data is only a first step in violence reduction. Once a good dataset has been collected and a partnership has been established, the data then need to be used to identify areas for intervention and support the police in reducing violence. This requires not only good analysis of the data but also an understanding among relevant partners about how the data can be used and interpreted.

This guidance has outlined some of the key uses of A&E data to support violence-reduction initiatives. The predominant use of these data in England and Wales has been to support licensing officers in enforcement and also in informing licensing decisions. A&E data can validate and reinforce police knowledge of problem premises and also provide the grounds to initiate investigations or targeted interventions in bars, pubs and clubs that have high levels of interpersonal violence.

Outside licensing, there are many other uses for which A&E data may be suitable, including identifying other violent hotspots not necessarily related to licensed premises, identifying violence in schools, providing an indicator of levels of domestic violence in an area and identifying unique or unexpected types of violence.

Readers of this guidance should be aware that many of the suggested interventions related to these uses have not been empirically tested to know if they are effective. In turn, these uses of A&E data should be approached as potentially good practice rather than as proven best practice. Where these initiatives are implemented their outcomes should be tracked and recorded to build an evidence base. Also, where the use of A&E data can be linked to a reduction in violence in an area, this success should be communicated to the A&E staff providing the data – to encourage their continued support of the partnership – as well as to the broader community of practitioners making use of these data.

Looking ahead, it is clear that a community of practice is growing for this type of injury surveillance and individual forces are testing innovative ways to interpret and use A&E data as a source of intelligence. This guidance is intended to help build this community further. Practitioners using these data are therefore encouraged to maintain links and communicate with one another, through channels such as the College of Policing, to continue to share lessons about how to start and maintain partnerships and make the best use of these data to reduce violence.

## 7. Endnotes

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<sup>1</sup> Injury surveillance is a broader term encompassing a wide range of systematic tracking approaches to identify and prevent both intentional and unintentional injuries; see for example Holder, Y., Peden, M., Krug, E., Lund, J., Gururaj, G., & Kobusingye, O. (2001). *Injury Surveillance Guidelines*. Geneva: World Health Organization.

<sup>2</sup> A technical report, published separately, provides the findings of the literature review, which focused on the uses of A&E data in the UK and internationally. The technical report also outlines the methods used in the production of this guidance (for the literature review, interviews with practitioners and a workshop with practitioners).

<sup>3</sup> Quigg, Z., Hughes, K., & Bellis, M.A. (2011). Data sharing for prevention: a case study in the development of a comprehensive emergency department injury surveillance system and its use in preventing violence and alcohol-related harms. *Inj Prev*. doi: 10.1136/injuryprev-2011-040159

<sup>4</sup> Shepherd, J. (2007). *Effective NHS contributions to violence prevention: the Cardiff Model*. Cardiff: Cardiff University

<sup>5</sup> Droste, N., Miller, P., & Baker, T. (2014). Review article: Emergency department data sharing to reduce alcohol-related violence: A systematic review of the feasibility and effectiveness of community-level interventions. *Emergency Medicine Australasia*. doi: 10.1111/1742-6723.12247.

<sup>6</sup> Shepherd, J. (2007). Preventing alcohol-related violence: a public health approach. *Criminal Behaviour and Mental Health*, 17, 250-264. doi: 10.1002/cbm

<sup>7</sup> Warburton, A.L., & Shepherd, J.P. (2004). Development, utilisation, and importance of accident and emergency department derived assault data in violence management. *Emerg. Med. J.*, 21, 473-477.

<sup>8</sup> Florence, C., Shepherd, J., Brennan, I., & Simon, T. (2014). An economic evaluation of anonymised information sharing in a partnership between health services, police and local government for preventing violence-related injury. *Inj Prev*, 20, 108-114. doi: 10.1136/injuryprev-2012-040622.

<sup>9</sup> Droste, N., Miller, P., & Baker, T. (2014). Review article: Emergency department data sharing to reduce alcohol-related violence: A systematic review of the feasibility and effectiveness of community-level interventions. *Emergency Medicine Australasia*. doi: 10.1111/1742-6723.12247.

<sup>10</sup> Giacomantonio, C., Sutherland, A., Boyle, A., Shepherd, J., Kruithof, K., & Davies, M. (2014). *Injury surveillance: using A&E data for crime reduction*. Technical report. Ryton-on-Dunsmore: College of Policing.

<sup>11</sup> The College of Policing can be contacted via email at: [contactus@college.pnn.police.uk](mailto:contactus@college.pnn.police.uk).

<sup>12</sup> As developed by Cardiff University's Violence and Society Research Group in collaboration with the Cardiff Community Safety Partnership.

<sup>13</sup> Twelve hospitals in the UK are designated as Major Trauma Centres. These all have A&Es at the front and extended services behind them. A&E departments in Major Trauma Centres benefit from increased investment and staffing.

<sup>14</sup> The College of Emergency Medicine. (2009). *Guideline for information sharing to reduce community violence*.

<sup>15</sup> For further information on the use of ambulance data, see for example: Ariel, B., Weinborn, C., & Boyle, A. (2013). Can routinely collected ambulance data about assaults contribute to reduction in community violence? *Emerg Med J*. doi: 10.1136/emered-2013-203133.

<sup>16</sup> A Caldicott Guardian is a senior person responsible for protecting the confidentiality of a patient and service-user information and enabling appropriate information-sharing. For a full list of Caldicott Guardians in the UK, see

[http://systems.hscic.gov.uk/data/ods/searchtools/caldicott/index\\_html](http://systems.hscic.gov.uk/data/ods/searchtools/caldicott/index_html) [last accessed 27 October 2014].

<sup>17</sup> General Medical Council. (2009). Confidentiality: reporting gunshot and knife wounds: General Medical Council.

<sup>18</sup> This phrase comes from interviews with participants.

<sup>19</sup> Workshop participant.

<sup>20</sup> Identified through interviews with participants.

<sup>21</sup> Identified through interviews with participants.

<sup>22</sup> Shepherd, J. (2007). Preventing alcohol-related violence: a public health approach. *Criminal Behaviour and Mental Health*, 17, 250-264. doi: 10.1002/cbm.

<sup>23</sup> Semple, H., Ward, E., Bailey, W., Gordon, N., Ashley, D., McNab, A., Burrows, H., Jones, N., Pearson, J., Grant, A., & Gordon-Strachen, G. (n.d.). Utilization of an Injury Surveillance System for Targeting Interventions for Violence and Injury Prevention in Kingston, Jamaica.

<sup>24</sup> This system assigns scores to licensed premises based on incidence of crime and regulatory offenses, as well as steps taken by management at the premises to control crime and disorder. The full traffic light scoring system can be found at Appendix B.

<sup>25</sup> Warburton, A.L., & Shepherd, J.P. (2004). Development, utilisation, and importance of accident and emergency department derived assault data in violence management. *Emerg. Med. J.*, 21, 473-477.

<sup>26</sup> Bellis, M.A., Leckenby, N., Hughes, K., Luke, C., Wyke, S., & Quigg, Z. (2012). Night-time assaults: using a national emergency department monitoring system to predict occurrence, target prevention and plan services. *BMC Public Health*, 12, 746-758.

<sup>27</sup> Social marketing involves a range of advertising (through posters and billboards) designed to influence people's behaviour for social benefit

<sup>28</sup> Ramsay, S.E., Bartley, A., & Rodger, A.J. (2013). Determinants of assault-related violence in the community: potential for public health interventions in hospitals. *Emerg Med J.* doi: 10.1136/emered-2013-202935.

<sup>29</sup> Victims of domestic violence may also be individually identified and supported by other NHS staff after their attendance at an A&E department with DV-related injuries but this would not normally occur through police analysis of A&E data.

<sup>30</sup> Dines, C. (2011). Using A&E data to prevent violence in communities. *Nursing Times*, 107(13). While the example cited in this article did not specifically mention free-text searching as the method used by analysts to identify the use of bricks and debris as weapons, bricks and debris are not generally included as weapon categories for A&E data (see e.g. figure 2.1 in this document). It is therefore assumed that these were identified through free-text searching.

<sup>31</sup> Warburton, A.L., & Shepherd, J.P. (2004). Development, utilisation, and importance of accident and emergency department derived assault data in violence management. *Emerg. Med. J.*, 21, 473-477.

<sup>32</sup> Florence, C., Shepherd, J., Brennan, I., & Simon, T. (2011). Effectiveness of anonymised information sharing and use in health service, police, and local government partnership for preventing violence related injury: experimental study and time series analysis. *British Medical Journal*, 342, d3313. doi: 10.1136/bmj.d3313; see also Florence et al (2014) cited at endnote 4.

<sup>33</sup> While it is outside the scope of this guidance to explain how such an analysis may be done, analysts with the requisite skill set may refer to the studies cited for further information.

<sup>34</sup> Droste, N., Miller, P., & Baker, T. (2014). Review article: Emergency department data sharing to reduce alcohol-related violence: A systematic review of the feasibility and effectiveness of community-level interventions. *Emergency Medicine Australasia*. doi: 10.1111/1742-6723.12247.