Injury surveillance: using A&E data for crime reduction
Technical report

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Publication date: December 2014

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Acknowledgements

Introduction

Over the past two decades, sharing of Accident and Emergency (A&E) data with the police has been increasingly promoted by scholars and professionals in England and Wales as an activity that can help reduce crime (e.g. Shepherd & Lisles, 1998; The College of Emergency Medicine, 2009).[1] Previous research found that sharing A&E data to inform violence prevention initiatives in Cardiff reduced the number of patients requiring emergency department treatment for assault by 35 per cent (Shepherd, 2007b). A&E data could include information about date and time of attendance at A&E, as well as the location, nature and date and time of the assault. The potential value of A&E data for crime reduction has been recognised by many police practitioners; however, the level and types of use of these data by police, Community Safety Partnerships (CSPs) and other bodies differs between areas in England and Wales. While good and promising practice has been developed in a number of local areas, these practices are not always known to other practitioners who may want to carry out similar activities.

To fill this gap, RAND Europe was commissioned by the College of Policing to undertake research into current uses of A&E data by police in England and Wales, review the state of practice in key sites across England where A&E data sharing has been established and incorporate the findings into a guidance document for police practitioners (Giacomantonio et al., 2014).

This technical report outlines how the guidance document was developed, including a description of the methodology used (Section 1), findings from the literature review into A&E data-sharing practices (Section 2), an overview of the findings from interviews and a workshop (Section 3) and information on the sources used for the police guidance document (Section 4).

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[1] It should be noted that A&E data sharing is a practice, not an intervention.

1. Methodology

The following sections describe the methodological approach applied for the current study, including a targeted literature review (Section 1.1), an analysis of datasets and analytic products (Section 1.2), interviews with practitioners (Section 1.3) and a workshop with practitioners (Section 1.4). The final section (1.5) summarises the main limitations of this research.

1.1. Review of existing literature

A review of literature was conducted to identify published examples of how incident data have been used for problem-oriented policing and other violence reduction initiatives. The review was conducted to support the development of the guidance document rather than to provide a comprehensive or systematic literature review. Relevant literature and sources were identified through a two-stage process. First, the project's expert advisors (Dr Adrian Boyle and Professor Jonathan Shepherd), who are very familiar with the literature on this topic, provided an initial list of published papers. Second, the research team identified other articles that cited these published papers (using Google Scholar). In total, 40 articles were identified of which 26 were assessed to be relevant.[2] Sources were then reviewed to extract information about how incident data have been used and about perceived good practices.

1.2. Review of datasets and analytic products

In order to gain an overview of the current use of A&E data by police in England and Wales, the research team conducted a review of A&E datasets from six forces and related analytic products (such as CSP or police reports using A&E data) from nine forces. The datasets and products were reviewed to reveal commonalities as well as differences between approaches.

As outlined further in the guidance document, the datasets provided were all modified versions of the Cardiff Model dataset (see for example, The College of Emergency Medicine, 2009), with some differentiation between the types of data collected. These datasets were not used for complex analysis since they were aimed at providing descriptive analysis that could support violence reduction initiatives in a specified area. As such, the analysis of these datasets and the analytic products focused on the practices and initiatives that can be supported by A&E data, rather than instructions on how the data can be analysed (it is assumed that police analysts are capable of producing the kinds of outputs presented in the guidance within their existing skill sets).

1.3. Interviews with practitioners

To understand how A&E data-sharing processes work in practice, including barriers and solutions encountered, the research team conducted face-to-face (n=4) and telephone interviews (n=9) with representatives from existing partnerships involved in sharing A&E data. This included both people involved with past or ongoing negotiations to set up sharing agreements as well as those involved with the day-to-day use of these data. A purposive sampling approach was used, where appropriate respondents with relevant knowledge were identified in consultation

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[2] Some of these 26 papers are not cited in this report. A full list of all identified articles is included in Appendix B.

with the College of Policing as well as through utilising existing contacts held by the research team. In total, 13 interviews were conducted across a range of participants in seven different force areas. The range of types of interviewees is reflected in Table 1:

Table 1: Interviewee background

Role/organisation	Number of interviewees
Police analyst	3
Government, Public Health England and NHS	4
Licensing officer	1
Community Safety Partnership	1
Police other	3
Other	1
Total	**13**

Given the scope of the project and the focus on providing guidance for the police, six of the 13 interviewees were from the police. Perspectives from healthcare practitioners were captured through the expert advisors to the project as well as through four interviewees currently working within the NHS or Public Health England. The study did not include any interviewees currently working in A&E departments.

Interview schedules were designed in consultation with the College of Policing, covering topics such as barriers and solutions to establishing and maintaining effective partnerships for data sharing, practical implementation of agreements, use of the data and key lessons for future data sharing initiatives. A copy of the interview schedule can be found in Appendix A of this report.

Notes and audio recordings from interviews were analysed to draw out relevant findings in relation to key themes, including the rationale for A&E data collection; maintaining partnerships with A&E departments; identifying existing and promising practices; and identifying potential pitfalls in analytic strategies. The content of these interviews was used to support and/or nuance the findings from the dataset and analytic product review.

1.4. Workshop with practitioners

In order to validate the findings from interviews and the analysis of datasets, as well as to ensure that the findings were presented in a way appropriate to the expected end-users of the guidance (i.e. police practitioners), a workshop with practitioners was held during the final stages of the project. Workshop participants were identified and recruited through police forces and CSPs who had provided interviewees; again, given the scope of the project and focus on police perspectives. The research team did not seek to include other possible participants such as A&E staff in this exercise.

In total, 18 practitioners attended the workshop (excluding the research team and College staff) covering nine different force areas. Due to guarantees of anonymity, names and areas are not mentioned here, but Table 2 provides an overview of the roles or organisations the participants represented.

Table 2: Workshop attendees

Role/organisation	Number of attendees
Police analyst	8
Government and public health	4
Licensing officer	2
Community Safety Partnership	1
Police other	2
Other	1
Total	**18**

With permission from the attendees, the workshop was audio-recorded under the Chatham House rule, meaning that quotations used in the report would not be attributable to specific participants. The first part of the workshop was structured around five discussion questions covering topics such as the reasons for sharing A&E data, ground rules for successful use of the data, the best way to use the data and limitations and inappropriate use(s) of A&E data. The semi-structured setting of the workshop resulted in a lively discussion in which participants shared their experiences of A&E data sharing as well as frustrations and/or wishes for future development. Finally, during the second part of the workshop, preliminary findings of the interviews and the analysis of datasets and analytic products were shared with the participants, to verify these findings and identify possible gaps.

1.5. Limitations

This research project aimed to identify existing A&E data-sharing practice but did not assess these practices in terms of effectiveness. In general, while evaluations of the Cardiff Model approach empirically demonstrated the value of A&E data sharing in that city, there is little evidence about the effectiveness of other specific initiatives arising from the use of A&E data. Without rigorous evaluation evidence as to effectiveness, the initiatives identified in the guidance should be seen as potentially valuable approaches to the use of A&E data, though should not be read as necessarily best practice in the field of A&E data sharing.

Furthermore, a targeted approach was taken towards the literature review, without the intention to cover all available literature on A&E data sharing, meaning that omission may have occurred. Similarly, the interviews were used to provide a context for current existing partnerships, without aiming to cover all forces or organisations involved in A&E data sharing. As such, the use of purposive sampling limits the generalisability of the findings.

2. Literature review

The aim of the literature review was to provide examples of how incident data have been used for problem-oriented policing and violence reduction initiatives. This section describes findings from the review as to the value of this form of data sharing (section 2.1), barriers to sharing (section 2.2), a note on the possible use and sharing of ambulance data (section 2.3) and examples of perceived good practice (section 2.4). Box 1 below provides an overview of the key messages derived from this selected literature review.

Box 1: Key messages

Value of data sharing between A&E and the police:
- Sharing of A&E data appears to be valuable in reducing violence. For example, evidence from one city (Cardiff) found a reduction in police-recorded violence following the introduction of changes in policing practices, based on A&E data
- A&E data can provide information which is not always reported to (and recorded by) the police
- A&E data can be useful for crime prevention initiatives such as informing licensing decisions.

Barriers:
- Lack of buy-in from hospital staff, for example through fear of discouraging patients from seeking medical treatment
- Practical constraints, such as limited staff time and resources at peak times in emergency departments, could limit data collection feasibility and quality
- Data collection and sharing with partners could be problematic due to, for example, inconsistent data collection and inadequate IT systems
- A&E staff might not have accurate information on key issues such as where an incident took place, which could limit the usefulness of the data for the police.

Examples of reported good practice:
- Providing clear guidance for hospital staff about the way in which their role can contribute to violence reduction efforts has been reported to facilitate data sharing between hospitals and the police
- Involving senior hospital managers in CSPs could encourage trust from hospital staff
- Using A&E receptionists to capture assault data as they have initial contact with patients
- Providing feedback to all stakeholders involved in the process of A&E data collection and data sharing is important to maintain interest and motivation among these stakeholders
- Using technology to facilitate data sharing and analysis. In Jamaica, an injury surveillance system, used in seven of the largest government hospitals in Jamaica, is combined with a Geographic Information System that enables, among others, mapping of violence-related injuries and targeting of injury prevention initiatives
- Fostering positive relationships between all parties involved is an important element for successful data sharing. In the Wirral local authority area, for example, A&E receptionists received training in completing data collection forms.

2.1. Value of data sharing between A&E departments and the police

A&E data can provide valuable information that is not always reported to (and recorded by) the police. For example, in one emergency department in North-West England, Quigg et al. (2011) found that at least 25 per cent of assaults identified by A&E staff had not been recorded by the police. A&E data are able to identify the time and location of unreported incidents, information about trends in weapon use and information about repeat injuries, of which the latter is 'a recognised precursor to homicide in the home and elsewhere' (Shepherd, 2007a, p. 3).[3]

Based on empirical research into inter-agency working to reduce A&E attendance in Bristol, Carter and Benger (2008) make the case that pooling of health and police data creates a much clearer picture of incidents and can lead to more informed suggestions of interventions. For example, as Young and Douglass (2003) indicate, A&E data can provide useful information about hotspots. Location details can be particularly useful for the police in terms of identifying potential hotspots (Young & Douglass, 2003). Bellis et al. (2012) underline the utility of recording the residence details of patients (e.g. where the patient lives, in addition to the location of the incident), as this provides demographic and socio-economic information that can be helpful in identifying and preventing violence. The authors also suggest that both hospitals and police should take into consideration seasonal festivities (e.g. New Year's Eve, St Patrick's Day, Hallowe'en, etc.) to build up a more complete picture of violence.

A&E data can also inform decisions about granting alcohol licences, including whether a licence is granted to an applicant at all, or whether a licence has particular conditions attached to it (for example, relating to opening hours, capacity, seating and so on). Local Authorities' licensing powers are seen as an important crime prevention tool (Warburton & Shepherd, 2004), and A&E data can also be used by public service managers such as when completing Joint Strategic Needs Assessments (JSNAs).[4] This includes feeding the results to those managing public transport networks (who can increase frequency of services in hotspot areas for violence, or provide training to bus drivers in conflict management, for example) and schools (prevention through education) (Warburton & Shepherd, 2004).

Evidence from one city (Cardiff) found a reduction in police-recorded violence following the introduction of changes in policing practices, based on A&E data (Florence et al., 2011). Research conducted in other police force areas in England and internationally has found substantial reductions in levels of police-recorded assaults and A&E recorded levels of violent injuries following a number of similar interventions (Droste et al., 2014). The cost savings associated with reducing

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[3] Although it is beyond the scope of this guidance, there also appear to be uses beyond violence prevention. For example, Hibdon and Groff (2014) suggested that using data on those hospitalised from drug abuse can be incorporated successfully into the policing of drugs.

[4] JSNAs 'analyse the health needs of populations to inform and guide commissioning of health, well-being and social care services within local authority areas' (NHS Confederation, 2011).

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violence can be significant. In the evaluation of A&E data sharing in Cardiff it was estimated that combined savings to both the health service and the criminal justice system could be as much as £6.9 million in Cardiff alone versus comparison sites over a four year period (Florence et al., 2014).

The literature reviewed for this study provides examples of how A&E data can be used and acted upon if they are shared with the police and other local agencies. The following section looks at some of the obstacles to data sharing identified in the literature that need to be overcome in order to realise the value of these data.

2.2. What are the barriers to data sharing between health departments and police forces?

2.2.1. Lack of buy-in from hospital staff

Based on information reported by healthcare staff in a questionnaire, Shepherd and Lisles (1998) found that some staff have previously found it difficult to work alongside the police for fear of discouraging patients from seeking medical treatment. They highlight how concerns about maintaining patient confidentiality have resulted in some resistance to sharing information. Davison et al. (2010) point out the asymmetrical nature of data sharing in which there are fewer perceived benefits for hospital staff as opposed to police or CSPs, which provides little motivation for hospital staff to collect the data. This finding has been echoed in other studies in England and Wales, highlighting that buy-in from hospital staff is a key problem to be overcome in data-sharing agreements (see for example Ariel et al., 2013).

2.2.2. Impracticalities

Some literature has identified the practical constraints on hospital staff that make it difficult for them to record the data. Some of this is about a lack of time, particularly during busy periods (see for example Jacobson & Broadhurst, 2009). Benger and Carter (n.d.) further point to what they term 'night duty apathy' among A&E nurses in peak hours, which can result in poor compliance in completing additional forms.[5]

2.2.3. Data collection

On arrival in A&E, patients' data are recorded in A&E data systems. These might not have fields that allow reception staff to record relevant information about violence. Davison et al. (2010) found that the paper-based method of collecting data was inconsistent as staff did not always complete required fields (although electronic collection was not automatically more successful due to issues related to IT systems). Other research has similarly pointed to inadequacies in IT systems to collect data. For example, in one emergency department, Boyle et al. (2012) highlighted initial problems with the locally tailored software used by A&E receptionists, which did not provide sufficient options for recording relevant data. Likewise, Jacobson and Broadhurst (2009) identified insufficient IT systems and a lack of national coordination as a significant barrier in collecting consistent data.

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[5] However, these forms need not be 'additional' and can be integrated into existing hospital systems.

Another barrier to the collection of accurate information identified in previous studies is that patients might be reluctant to answer questions about personal issues (such as their relationship to the person who inflicted the injury) in a busy, public A&E reception (Davison et al., 2010; Goodwin & Shepherd, 2000). For this reason, Goodwin et al. (2000) suggest that receptionists collect basic information (such as injury type and location), while triage nurses enquire further when in more private settings with the patient.

2.2.4. Data flows

Research also highlights the importance of having agreement about who should receive data once they are collected by A&E staff. For example, in one study in South East England, one barrier was that data were initially sent to an analyst at the local council as opposed to someone at the police force (Boyle et al., 2012). The analysts at the council did not then send this on to the local force, who were therefore excluded from the data-sharing process. This example highlighted an issue relating to the flow of data and the importance of ensuring that all stakeholders are clear about where the information is being sent to.

2.3. A note on ambulance data

While beyond the remit of this study, it is important to note a small but growing literature discussing the use of ambulance data alongside police and A&E data. For example, Boyle et al. (2012) found that 30 per cent of ambulance callouts for assaults in Cambridge did not result in transfer to hospital and therefore were not included in A&E data (and thus not picked up by police). Ariel et al. (2013) found that nearly a fifth of ambulance hotspots were not recognised by police as problematic areas. These papers illustrate that A&E data may capture more serious cases of violence and that a complete picture of violence may require triangulating these sources. The paper by Ariel and colleagues (2013) illustrates how integrating ambulance data with police data can better inform the policing of hotspots. Furthermore, ambulance staff can be important actors in the link between health and the police as they frequently work alongside the police and can therefore establish important relationships that can facilitate further data-sharing opportunities (Shepherd & Lisles, 1998). However, it should be noted that ambulance and A&E data will not usually be owned by the same agencies and access to these data will therefore require additional negotiation with ambulance trusts.

2.4. Examples of reported good practice

2.4.1. Communicating with hospital staff to overcome concerns and provide guidance on practice

To facilitate data sharing between hospitals and the police, Shepherd and Lisles (1998) recommend provision of clear guidance for hospital staff about how their role in recording data can contribute to violence reduction efforts. Boyle et al. (2012) found that concerns about patient confidentiality from healthcare staff were overcome by sharing a statement from the Information Commissioner's Office (ICO) which made it clear that all data would be depersonalised and used responsibly by the police.[6] Establishing information-sharing protocols has also

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[6] The ICO (enquiry reference ENQ 0288158) states that:

been highlighted as a cost-effective and efficient way of increasing the likelihood of consistent data sharing in several studies (Droste et al., 2014).

2.4.2. Securing engagement from senior health officers

Experience of data sharing in the UK highlights the value of involving senior hospital managers in CSPs to encourage trust from hospital staff (for example Boyle et al., 2012; The College of Emergency Medicine, 2009). In particular, giving them a lead role in co-ordinating data collection is identified as a practical way to ensure involvement from hospital staff (McManus & Mullett, 2004). Dines (2011) suggests holding CSP meetings in hospitals to make it easier for senior healthcare managers to attend. Another way to foster active interest from senior hospital staff is to emphasise the ways in which they could use data to adapt their own practices to help prevent violence (e.g. through domestic violence screening processes in the hospitals) (Ramsay et al., 2013). Facilitating active interest could be done by establishing rapid reviews of research and carrying out effectiveness audits throughout the process (McManus & Mullett, 2004).

2.4.3. Enabling and training A&E receptionists

There is agreement in the literature that A&E receptionists are best placed to capture assault data. Receptionists have been found to be more able to fill out questionnaires than triage nurses (who deal with the incidents) as they have more time to do it (Goodwin & Shepherd, 2000). To increase the likelihood of receptionists recording accurate data, there is also consensus over the importance of two-way feedback between data collectors and data users (Davison et al., 2010). For example, Boyle et al. (2012) found that when receptionists were given feedback in the form of crime reports, the amount of usable data collected by them rose from 20 per cent to 70 per cent. This echoes a wider point about the importance of providing feedback to all stakeholders in the process to maintain interest, which has been identified elsewhere (for example Quigg et al., 2011).

To overcome some of the challenges associated with the time available to A&E receptionists to collect data, and inexperience among receptionists in collecting personal or more complex data, some hospitals used a triage system whereby a receptionist would collect basic data and at another point a more senior member of staff could fill in further more complex details (Jacobson & Broadhurst, 2009). Training is also identified as an important feature of maintaining the quality of data collection (Davison et al., 2010; McManus & Mullett, 2004).

2.4.4. An example of the use of technology in Jamaica

One innovative use of technology to facilitate accurate and useful data sharing has been implemented in Jamaica since 2002 (Semple et al., n.d.). Here, a computer system – 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 location and circumstances of the incident. By 2002, JISS included around 12,000 cases. Integrating a Geographic Information System

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'The Data Protection Act 1998 is not a barrier to the appropriate sharing of personal information. It should not be seen as preventing any Trust from sharing this anonymised information in a responsible manner. Trusts simply need to bear in mind that some of the information they share might be potential personal information and should take precautions to minimise the likelihood that this will present and difficulty once the information has been anonymised and shared.'

(GIS) component into JISS enabled stakeholders to 'map violence-related injuries, target injury prevention activities and evaluate the impact of intervention activities at the community level' (Semple et al., n.d., p. 3). Maps prepared by GIS technicians, showing the concentration of injuries in specific areas are used in several ways. Maps are used during discussions with residents in community meetings to inform the community about what is happening in their area. The maps are also used to show available community facilities like schools and police stations.

Acting on information from GIS, the design of injury prevention initiatives involves several partners in Jamaica, including the Ministry of Health, the security forces, private sector, the University of the West Indies and non-governmental organisations. Detailed injury hotspot maps are shared with the Jamaica Constabulary Force so that the police can then have a stronger presence in these hotspots. Additionally, maps have also been used for healthy lifestyle programmes in specific areas.

In terms of matching injury data from JISS with street address data, according to Semple et al. (n.d.), 'with the acquisition of street address data from the Jamaica Constabulary Force, the GIS now achieves a match rate of more than 80 per cent' (p. 5). The speed of the geocoding is regarded as very important, both in terms of time saving as well as keeping information up to date, and through GIS the Ministry of Health now has the means to geocode regularly. In terms of speed, on some computer systems, 12,000 addresses can be geocoded in less than two minutes. This kind of high level geocoding allows for effective area targeting with prevention programmes (Semple et al., n.d.).

2.4.5. Fostering positive relationships between police, hospital staff and other stakeholders

Based on experience of developing data sharing partnerships in London, Jacobson and Broadhurst (2009) suggest making the mutual benefits of data sharing clear to all parties involved, as well as encouraging wider partnership beyond simply sharing data (for example, formal involvement of hospital staff in Community Safety Partnerships). Shepherd and Lisles (1998) recommend that police liaison officers should be introduced in all A&E departments to build relationships between health and police to improve information exchange.

Keeping all the stakeholders motivated is recognised in the literature as an important step in facilitating data sharing. Davison et al. (2010) recommend raising awareness among staff through regular group meetings and training sessions, as well as using local, dedicated champions to facilitate implementation of data-sharing arrangements.

In a case study looking at successful data sharing, Quigg et al. (2011) consider the establishment of the Trauma and Injury Intelligence Group (TIIG) in the Wirral local authority area. Receptionists received training from a TIIG officer in how to complete data collection forms. Receptionists recorded data on alcohol consumption, and for assault patients, recorded the location of the assault and the number of attackers. Under this particular initiative, data sharing takes place between TIGG and hospital staff and anonymised data is shared with TIIG on a monthly basis. An emergency department quality officer looks at data quality and

a TIIG officer cleans and analyses the data. Data sharing protocols were developed to help all parties understand how the data were to be managed and shared. Bi-monthly meetings were held and attended by TIIG, health and community safety leads in which potential interventions were discussed. Interventions included targeting premises where assaults took place (as identified through A&E data). Through maintaining regular contact between the police, health and community safety officers involved, helpful data were captured and utilised to significantly reduce incidents of alcohol and violence-related injuries over a six year period (Quigg et al., 2011).

3. Findings from the interviews and workshop

This section provides a short overview of the findings from interviews and the workshop. As described in Section 1, notes of interviews and the workshop were subject to thematic analysis to identify the key messages.

3.1. Interview findings

As described in Section 1, interviews were conducted to understand how A&E data-sharing processes work in practice, including barriers and solutions encountered. The following key messages were identified from analysis of interview data:

- Those embarking on the use of A&E data should be aware that datasets will always be incomplete and thus likely have errors
- Interviewees highlighted the value of maintaining partnerships, for example through providing feedback to A&E staff to maintain their commitment to sharing
- Regarding mapping, while maps can highlight areas or times that are priorities for intervention, their value might be limited due to inaccuracies in data. As such, these maps are mainly used for verification of existing data only
- Due to partnership agreements that do not allow non-anonymised data sharing, A&E data is not suitable to support (post-incident) detection-focused activities
- A&E data supplement other data and can only provide a proxy measure for levels of violent crime
- Other possible data that might be used in the future include ambulance data and domestic violence data.

3.2. Workshop discussions

As mentioned in the Section 1, the workshop was structured around discussion questions covering topics such as the reasons for sharing A&E data, ground rules for successful use of the data, the best way to use the data, and limitations and inappropriate use(s) of A&E data. Furthermore, for verification purposes, preliminary findings of the interviews and the analysis of datasets and analytic products were shared with the participants. Key messages were as follows:

- To date, A&E data is mainly used for licensing purposes

- Good and trusted working relationships with hospital staff, commitment and having someone 'championing' the product, data sharing on a regular basis and completeness of the data are among the ground rules for successful A&E data sharing
- Limitations and constraints on the sharing and use of A&E data include: flawed quality of the data; the fact that only anonymised data can be shared with the police (limiting interventions for specific groups of victims, such as victims of domestic violence); and difficulties faced by A&E receptionists who are responsible for recording the data, due to the nature of their job (e.g. working under pressure)
- The police do not always know what to do with the received A&E data or treat it as 'normal' crime data, while it should be treated as 'soft' intelligence
- Having enough capacity to conduct A&E data analysis and investing in the creation of the right IT infrastructure were two key recommendations made by participants for those considering establishing A&E data sharing.

4. Content notes relating to the Guidance document

To give the Guidance document a clear narrative flow, the use of citations was avoided in the text. In place of this, notes are provided below on how and from which data sources each section in the Guidance has been developed. Interviews are reported anonymously, using a number rather than the interviewee's name or organisation. A list of which interviews (by interviewee number) were used to develop key commentary sections in the guidance document is provided. This indicates the frequency with which an issue was mentioned by different interviewees, and the range of perspectives underpinning different parts of the Guidance. In all cases, the claims have been additionally reviewed by the report's expert advisors, Dr Adrian Boyle and Professor Jonathan Shepherd, and were discussed at the practitioner workshop for further validation.

4.1. Section 1: Introduction to the guidance

Section 1 was developed through a review of the literature as outlined in this technical report, as well as through contributions from Dr Boyle and Professor Shepherd.

4.2. Section 2: Understanding the basic dataset

The overview of the basic dataset's core and additional categories in Section 2 (pp. 13–15) was developed through review of the six force-level datasets that were shared with the research team, and also incorporated the College of Emergency Medicine (CEM) guidelines.

Commentary on the value of additional data categories and datasets (pp. 15–17) was drawn primarily from interviews 1, 3, 8, 11 and 13. Interviewees also provided information about complications of collecting additional datasets.

Data in Box 2.3 (p. 17) relating to Staffordshire was provided by Staffordshire County Council. Data relating to London A&E trusts was taken from NHS A&E weekly activity statistics (NHS England, 2014).

Commentary on the nature of the A&E workplace (p. 18) was developed based on interviews 6, 7 and 11.

The note on ambulance data (pp. 18–19) was developed in discussion with the expert advisors.

4.3. Section 3: Understanding data sharing partnerships requires understanding the health system

This section was developed by Dr Boyle, based on previous similar guidance he has developed for the College of Emergency Medicine (CEM) and others.

4.4. Section 4: Guidelines on maintaining an A&E data sharing partnership

This section was developed primarily through interviews. The notion of a 'champion' role (pp. 23–24) was reflected in virtually all of the partnerships examined and was mentioned by all 13 interviewees. The 'champion' term was drawn from a presentation provided by interviewee 11, and the term was also used by interviewee 7.

The importance of feedback (p. 24) was mentioned by many interviewees, particularly those in regular contact with or working for A&E departments, including interviewees 4, 5, 6, 7, 9, and 11.

Commentary on requests for additional data (pp. 24-25) was developed based on all interviews, as interviewees were each asked to provide their opinion on the relative value of potential additional data categories.

It is worth noting that there is some disagreement on the value of additional data and the risks of requesting it; most interviewees tended to believe that expanding the dataset was not worth the risk to the partnership (e.g. health care professionals are uncomfortable with the sharing of more data, and doing so can jeopardise established relationships), but one interviewee and two workshop participants noted that they had expanded their local dataset without compromising their relationship with local A&E stakeholders. It was suggested in these cases that a strong trust-based relationship was in place prior to expansion of the dataset, suggesting that this might be a necessary underlying condition for requests for additional data.

The value of data sharing across partners (pp. 25-26) was included in the guidance based on the practitioner workshop discussion. At the workshop, multiple participants took part in an extended discussion about how analysis would be overlooked unless it was targeted for use by specific individuals, and there was broad agreement on this point (it was recognised that this is true for many police analysis outputs, not limited to A&E data analysis).

The common pitfalls discussion (p. 26) represents a synthesis of the Section 4 messages.

4.5. Section 5: Guidelines on using A&E data for crime prevention

The types of analysis outlined in Section 5 (pp. 27–41) were developed based on the analytic products provided by nine forces, alongside the literature reviewed above. As noted in the guidance, the figures in Section 5 are based on hypothetical data created by the research team and are not real statistics from a specific area.

Discussion of the uses of data to validate knowledge or support initiatives (pp. 34–36) was developed primarily through discussion with police force representatives, including analysts and officers. These include interviewees 1, 3, 4, 5, 6, 7, 8, 9, and 11.

The following sources, identified in the literature review, are incorporated into this discussion:

- At Box 5.1 (p. 36), the example relating to the JISS example comes from Semple et al. (n.d.)
- References in Table 5.1 (p. 35) to 'free-text scan' and 'assailant relationship' data were modified from a PowerPoint presentation provided by an interviewee
- Discussion under 'Uses of type of assault data' relating to modifications to glassware (pp. 36-37) are drawn from Shepherd (2007)
- Discussion under 'Uses of location data' of the value of A&E data for transport networks (p. 36) is drawn from Warburton and Shepherd (2004)
- Discussion of the value of residence details under 'Uses of victim characteristics data' (p. 38) are drawn from Bellis et al. (2012)
- Discussion of the uses of A&E data for domestic violence screening (p. 36) are drawn from Ramsay et al. (2013)
- Discussion of evaluation of violence reduction initiatives using A&E data (p. 39) was developed from Warburton and Shepherd (2004).

Discussion of the limitations of A&E data (pp. 40–41) was developed from discussions with expert advisors to the project, interviews with analysts including interviewees 1, 3, 8, 9, and 11, and discussions at the practitioner workshop, alongside review of the six datasets provided to the research team.

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Appendix A: Example interview schedule

Below is an example interview schedule which indicates the range of questions that may have been asked of a participant in this study. Interview schedules were then modified in a worksheet format to account for different types of participants (police, health, local government and others).

Introduction
- Thank you for taking the time to talk today.
- [Overview of research, then:] Do you have any questions about our research?
- Are you ok with this being digitally-recorded, for accuracy? The recording will only be heard by the research team and destroyed on completion of the project.
- Would you be happy to be quoted anonymously in the final report? (We will simply report an interview number and your profession, so you might be 'interviewee x – police analyst'

The relationship
1. How long has your force been receiving this kind of data?
2. Who is/are your key contact(s) at [your local A&E department/the NHS – roles not names, i.e. is it the receptionist, a consultant, an ED doctor who facilitates access]?
3. How do you request/collect the data?
   a. Is it sent to you at specified times, or do you need to request each time?
   b. Do you use a service?
      i. [If yes] Do you think this service has been effective? Why or why not?
4. How would you rate the quality of the data that A&E staff provide?
   a. Are you able to start using the data immediately?
   b. If not, what needs doing to it first?
   c. Do you ever see variations in quality for the data you receive?
   d. What ways do you think data quality could be improved?
5. Has your partnership with the local A&E changed in any way, since you've been involved with this kind of analysis?
6. What do you/ others in your organisation do to maintain the relationship and could more be done?

The data
7. What kinds of A&E data do you currently receive?
8. How useful is the data that you receive?
9. How do you use it?
   a. Can you give us specific examples of how this information is being used?
10. Have you, or others in your force, considered or tried any alternative uses of this data? (if so, what?)

11. Is there other data which are available, which you would like to access?
    a. How would/might you use it?
12. Is there other data which you would like to have collected by A&E departments, which is currently not collected?
    a. How would/might you use it?
13. Is there anything that could help you/ team members make better use of the data, for example:
    a. Access to different statistical software
    b. Statistical skills training

Initiatives
14. What kinds of initiatives have come from your uses of A&E data?
    a. Directed/tasked patrols?
    b. Influencing licensing decisions?
    c. Others (e.g. tackling new weapons issues)?
15. Have these initiatives been successful?
    a. How are you measuring success in each case?
    b. Have there been any notable successes?
    c. Or any notable challenges or issues?

Decision-making
16. Are you aware of other ways that the A&E data has been used to inform decision making in force? For example, to influence strategy, policy or spending?
17. Who do you see as your primary 'customers' for the A&E analysis products in the force (ranks/ grades/ professions – not names.)
18. How is your analysis of the A&E data directed – for example, do you choose what analysis to carry out or are you asked to produce specific reports?
19. Are the uses of the data understood by your customers/ relevant force leaders (of all ranks/ grades)?
    a. Are there any major areas of misunderstanding/miscommunication relating to the appropriate uses of this data?
    b. Do you think others in the force see this data as useful?
    c. Do you have any ideas for how the data could be made more useful/ accessible to leaders/ decision makers in force?

Partnership working
20. Do you liaise or jointly work with any other organisations in relation to the use of the A&E data – e.g other Community Safety Partnership members?
21. Are you aware of how other forces make use of A&E data?

Closing questions
22. If you could offer one or two lessons for police or analysts regarding your experience in using A&E data for crime prevention, what would they be?

23. That concludes our questions for today. Is there anything we haven't discussed, which you think is important for us to understand regarding your work with A&E data?

Appendix B: List of all identified references

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