A MULTI-DISCIPLINARY APPROACH TO CRIME SCENE MANAGEMENT

2019

ANZPAA
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NIFS
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PURPOSE

This document is a culmination of learnings and experiences from forensic science service providers across Australia and New Zealand and has been developed in response to the changing service delivery requirements for crime scene response and evidence recovery. Given the complex and varied operating environments in place, the focus is not on standardisation; rather, it is proposed that this document be used to review current processes to identify further opportunities to maximise the value of forensic evidence. This includes both the investigative and evidentiary opportunities that forensic science may provide, as well as considerations and recommendations for future operating models as the landscape continues to evolve.

SCOPE

The scope of this document is restricted to a crime scene response and subsequent evidence recovery from a forensic services provider or laboratory/agency. This provider or laboratory/agency may be employed by the police organisation in control of the scene, or by a partner agency of the police organisation in control of the scene. The preferred model of operation for each forensic science service provider is dependent on a number of external factors and as a result, the points in this document should be considered in light of these factors and the requirements set out in agency policy and processes documents, as well as other embedded operating models e.g. Incident Command and Control Structure (ICCS) Plus – Common Approach to Incident Management.[1]

[1] ANZPAA 2017 http://www.anzpaa.org.au/publications/general/a-common-approach-to-incident-management-iccs-plus-iccs-plus Accessed: 11 June 2019.

CURRENT OPPORTUNITIES

There are a number of steps in the processes employed within current operating models across Australia and New Zealand from initial examination at the crime scene all the way through to analysis at the forensic science laboratory as depicted in *Figure 1*:

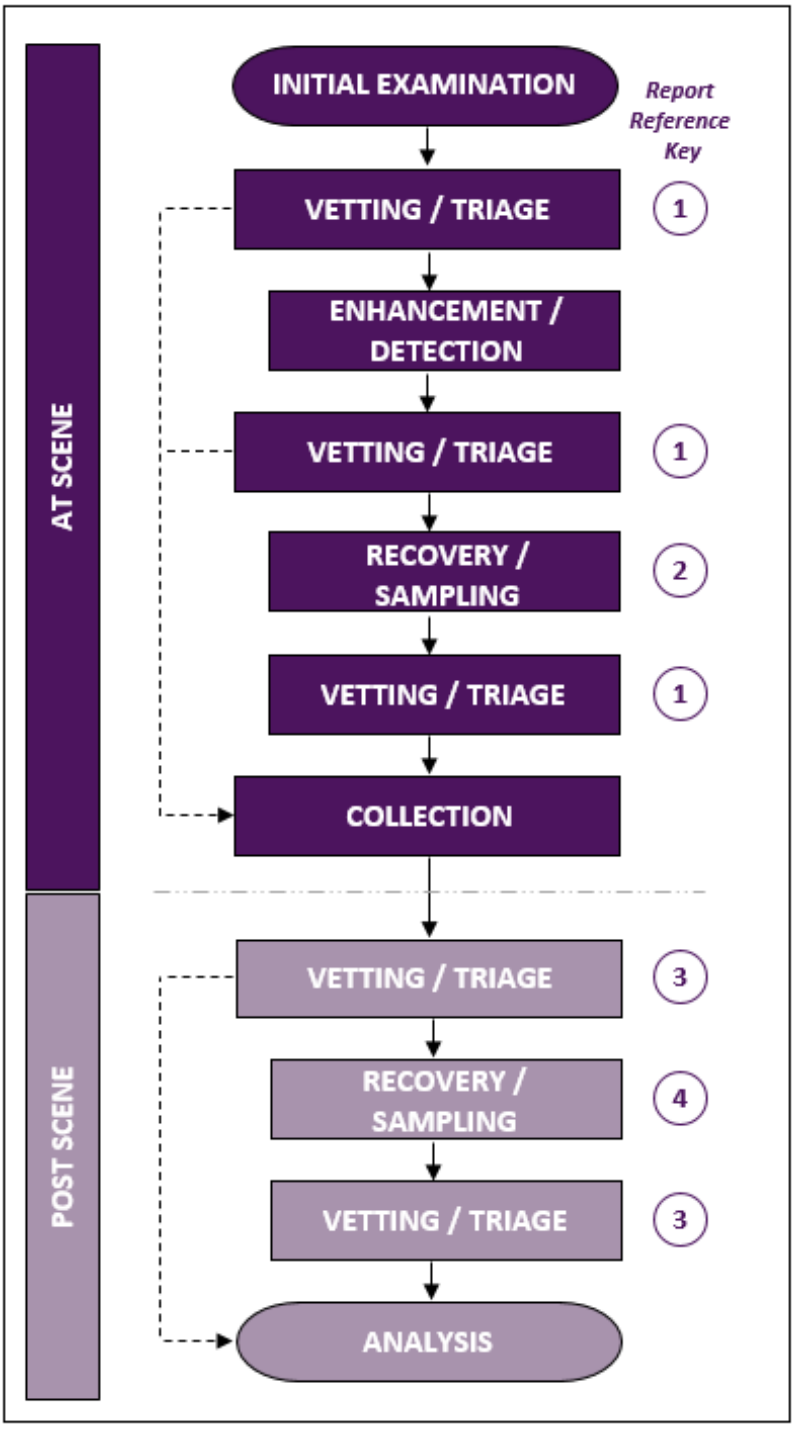

Figure 1 – Overview of current models

The initial examination refers to establishing a crime scene, recording the environment and developing a plan for the recovery of items of potential value. Enhancement/detection refers to techniques that may be used to visualise potential areas of interest, while recovery/sampling refers to techniques used to isolate samples of potential value. Vetting/triage decisions appear at numerous stages of the process and may involve decisions related to whether specific enhancement or recovery techniques are used, as well as whether items are collected and subsequently submitted for further analysis at the laboratory. Recording/documentation of processes followed and observations made occurs throughout each of the steps depicted in *Figure 1*.

The path that is followed will depend on what work is performed at the scene, that is, if items are collected in the absence of recovery/sampling at the scene, these techniques will need to be performed post scene at the laboratory. Alternatively, if recovery/sampling is performed at the scene, the samples may be suitable for submission directly to the laboratory for analysis.

MULTI-DISCIPLINARY APPROACH

It is proposed that the best way to maximise opportunities to recover forensic evidence and increase value is to take a multi-disciplinary approach wherever possible. This has been a growing area in forensic science in recent years, where the forensic science response is moving from a group of 'specialist' silos to a more multi-disciplinary 'generalist' approach. This is a significant change and will require training program updates/development, as well as process and policy updates. There are a number of jurisdictions where this has already commenced. Early indications are that the term 'generalist' is not well supported by the Australian and New Zealand forensic community, and as a result, references will be made to a multi-disciplinary practitioner in this document, instead of a generalist.

It is important to note that while there can be a significant increase in efficiency and effectiveness with the multi-disciplinary approach, the multi-disciplinary practitioner must be aware of their limitations to ensure that the required level of quality is maintained. This document advocates the importance of identifying the roles and training requirements, as well as clear escalation points at which a task extends beyond the multi-disciplinary practitioner to the specialist practitioner, that is, a person with extensive expertise in a specific discipline. Examples of skills that may be considered for multi-disciplinary practitioners include:

- Presumptive screening/confirmatory testing for biological material and DNA collection
- Impression evidence detection/enhancement/collection
- Latent fingerprint detection/enhancement/collection
- Use of photo/video recording/3D scanning
- Crime scene management processes
- Bloodstain pattern analysis
- Firearms examinations
- Use of light sources.

A multi-disciplinary approach should also be supported by a co-ordination role both at the scene and post scene, to ensure that decisions are made in consideration of the case as a whole. It is anticipated that although the person taking on the co-ordination role will be well versed in the different forensic science disciplines, both multi-disciplinary and specialist practitioners will have a role in ensuring that they regularly provide updates to inform decision-making in the co-ordination role.

VETTING/TRIAGE

The terms vetting and triage may refer to:

- identifying the potential probative value of items
- considering the types of analysis that may be available and/or suitable
- efficiency considerations, including priority allocation.

These all aim to maximise the amount of information that can be obtained and some important considerations for vetting/triage include:

SEQUENCING

The term sequencing refers to the order in which the available recovery/sampling techniques should be utilised. These decisions should be made in consideration of:

- contamination minimisation measures
- starting with the least destructive techniques so as not to comprise the potential for further analysis
- the destructive nature of the technique versus the potential probative value it may provide
- other potential items of value that may be available at the scene to answer the question at hand
- relevant investigative information available, such as an eyewitness accounts.

PRIORITISATION

The term prioritisation refers to the priority of the specific items/samples submitted for further analysis. Given the potential for a large number of items/samples to require further analysis, prioritisation decisions should be made in consideration of:

- the importance of the item in the context of the case (i.e. potential evidential value)
- investigational priorities
- the potential to disrupt further offending
- overarching organisational priorities e.g. focus on armed robberies due to community concern
- the potential impact on workload/business continuity e.g. increasing priority on one item may impact another.

AT SCENE (1)

At the scene a crime scene management plan can be used to inform vetting/triage decision-making. This may be in a formalised forensic strategy where preparation time ahead of scene attendance is available, or more of a dynamic plan at the scene when time is limited. It is proposed that vetting/triage decisions at the scene can be maximised through the use of multi-disciplinary practitioners that have knowledge around potential analysis opportunities and questions that can be answered by each technique. This will increase the amount and effectiveness of vetting/triage decisions that can be made at the scene, with a view to have items/samples ready for analysis without the need for further assessment and triage post scene.

POST SCENE (3)

Where vetting/triage decisions are required post scene at a reception point or laboratory, it is crucial that the right information is available. This is not only dependent on recording the correct information and decisions at the scene, but also ensuring that it is provided to those required to make vetting/triage decisions post scene.

This information sharing should be ongoing to ensure that case context and assumptions are correct, and that any analysis no longer required can cease. This is especially relevant where further analysis is performed by an external partner, as there may be agreements in place that control the number of items or samples that can be accepted or processed at any one time.

Where this model is already in place, these vetting/triage decision-makers generally have experience as specialist practitioners, so that they have the required awareness of testing opportunities that are available. The group of vetting/triage decision-makers is generally co-located with specialist practitioners and work together to enhance decision-making from a whole of case perspective. However, there are plans for this role to develop into its own area of specialisation with a dedicated training path and career progression opportunities that are geared at the development of decision-making expertise beyond a single discipline.

RECOVERY/SAMPLING

A multi-disciplinary approach to recovery will require a clear delineation of the roles of the multi-disciplinary and specialist practitioners. This would best be identified through engagement with specialist practitioners, which would also include promoting the value of any proposed changes – see demonstrated success section. This engagement will also assist in the identification of quality measures that should be in place, as well as escalation points, so that it is clear when a specialist practitioner will need to be consulted. Another point of delineation will arise in the reporting of results, that is, whether multi-disciplinary practitioners will report on the results of analyses they have performed, or specialist practitioners will be expected to adopt this responsibility. This decision will depend on the operating environment, as well as any requirements from external clients, but will need to be resolved for any multi-disciplinary model that is developed.

MULTI-DISCIPLINARY PRACTITIONER

The most efficient use of resources would see the multi-disciplinary practitioner trained to undertake the high use tasks within each discipline, to balance the training impost with the demand for the skill i.e. obtaining the best return on investment for the multi-disciplinary training. The level of training would depend on the experience and qualifications of the person(s) involved and should be performed in consultation with specialist practitioners. This consultative approach would also ensure that the multi-disciplinary practitioner develops an awareness of the specialist processes that are available. Experience from current models demonstrates that tasks which do not require complex specialist interpretation, such as basic fingerprint enhancement techniques and the presumptive screening of suspected drugs and biological material, are generally suitable for multi-disciplinary practitioners. This training will also aid in any future recruitment of specialist practitioners, as it is expected that this initial multi-disciplinary training will identify those with aptitude for specific specialist techniques.

AT SCENE (2)

The rapid application of recovery techniques by multi-disciplinary practitioners at the scene not only provides a timely response to reduce the need for scene guards and address potential environmental factors (e.g. inclement weather) but also provides the opportunity for samples to be prepared and submitted for further analysis directly from the scene, thereby reducing double handling and over-processing. In order for this to be completely effective, strict sample submission requirements need to be developed to avoid the situation where further manipulation is performed at the laboratory before analysis can be performed. Where multi-disciplinary practitioners are utilised, it may also be of value to provide them with training in the reconstruction of events, so that they can use their knowledge to more effectively target items of potential value.

POST SCENE (4)

The opportunities for multi-disciplinary recovery post scene will depend on where it is performed. Often this will be at a laboratory, which may provide services for multiple forensic science disciplines. Instead of each discipline performing recovery techniques sequentially in isolation, it is proposed that performing examinations with numerous specialist practitioners at once or training multi-disciplinary practitioners will result in a more efficient and effective recovery process that reduces the risk of contamination. The level of recovery required will also be impacted by how much is performed at the scene, so in the case of a multi-agency response, collaboration to develop the preferred approach is important. It should also be noted that where recovery is performed at the scene in the absence of specialist practitioners, accurate recording of information will be critical in the event the specialist practitioner is expected to provide their input or advice in the absence of scene attendance, or to report subsequent testing outcomes.

INVESTIGATIVE OPPORTUNITIES

It is important to consider what investigative opportunities may result from the timely provision of forensic information through a multi-disciplinary approach to the vetting/triage and recovery/sampling steps. These opportunities provide information to feed into a broader investigative plan or forensic intelligence product, but may not be suitable for use as evidence for the matter in question. Often the focus is on the timely provision of information, such as the urgent turn-around of a fingerprint or DNA result, but may also be in relation to ensuring that any and all forensic science opportunities are utilised. In situations where there is a lack of evidence to identify the offender, focus may shift to identifying more investigative opportunities at the scene, such as the potential to link one scene to another to potentially identify a larger pattern of offending. There may also be occasions where it is more important to disrupt a future criminal activity than to secure a conviction in the current matter and vetting/triage and recovery/sampling decisions may need to change accordingly. In these situations, it is important to have a good understanding of the potential for the exploitation of one opportunity to impact another.

AT SCENE

At the scene investigative opportunities may arise from the collection of items that would have previously been considered unsuitable because they did not meet the required evidentiary standard. For example, a latent fingerprint is located at a scene and it is determined that there is not likely to be enough detail for comparison. The evidentiary value of this item would be considered limited; however, the print may be used to infer some activity at the scene that may assist in identifying a more probative piece of evidence e.g. a poor quality print on a window indicating it was used as the point of entry to focus further sample collection. Investigative opportunities may also arise from the direct upload of information from the scene without the need for specialist practitioner intervention. For example, some jurisdictions directly upload latent prints to the national database to be searched using automated algorithms, which will return a list of potential hits in real time. This may provide a person of interest to inform investigative decision-making in a significantly reduced timeframe, providing greater investigative value.

POST SCENE

Post scene there may also be potential to consider the provision of information that does not meet traditional evidential standards for investigative purposes. Processes will need to be developed in consultation with specialist practitioners and investigators, to ensure that the limitations of the information being provided are understood by all parties. A centralised vetting/triage unit will also provide investigative opportunities, especially if the role includes oversight of the results of the different forensic analyses that are performed. For example, while the results of forensic analyses may not provide investigative leads in isolation, when considered together and in light of the results of forensic analyses for other matters currently being investigated, a pattern or linking of offences may be identified that assists in the identification of the offender(s).

DEMONSTRATED SUCCESS

Example 1 – Chemical enhancement of fingerprints at the scene:

A Regional Crime Scene Examiner attended a suburban address in relation to the attempted stealing of thousands of dollars' worth of building supplies that had been loaded onto a trailer at the address by the offender before being disturbed. The unknown offender had ram-raided the front fence with a vehicle and had left the scene after the occupant heard a noise. Colourbond roofing sheets were amongst the exhibits, however due to rain overnight all surfaces were wet, leaving traditional dusting methods inadequate. Small Particle Reagent (SPR) was used on the wet surfaces at the scene which developed an identifiable fingerprint. Later that afternoon the offender was identified as a result of the fingerprint identification.

Example 2 – Direct upload of fingerprints from the scene:

A Regional Forensic Manager attended the scene of a homicide where the victim was stabbed once in the carotid artery with three offenders involved. A preliminary assessment of the scene externally indicated a partial latent impression in blood located on the outside hand railing. Immediate fingerprint examinations were also conducted on the entry point where impressions were located on the inside and outside of the front screen door, which were uploaded to the Fingerprint Bureau and further enhanced by fingerprint experts. Within a 2hr 15-minute window from being advised of the existence of latent impressions, two co-offending suspects were identified. As a result of the identifications, profiling of the two offenders was conducted showing a link to a further male who had committed the actual stabbing of the victim. Further examinations conducted within the scene by the initial Scenes of Crime Officer and Forensic Manager indicated that a CCTV camera was located within the lounge room. The CCTV recording was able to be retrieved and processed by Electronic Recoding Technicians, which retrieved footage showing the offence in its entirety.

Example 3 – Significant turn-around time improvements for evidence recovery from firearms:

Previously, firearms requiring evidence of the handler and test firing would sequentially pass through separate fingerprint and biology processes before ballistics test firing to obtain an ABIN investigative outcome. This process included multiple transactions through a central store, significant wait time between each separate evidence recovery event and duplication of processes such as photography and note taking. The turn-around time to release the firearm for ballistics test firing was 90 days, which significantly compromised the investigative value obtained from an ABIN search. To address this, multi-disciplinary training was provided for staff to conduct both the DNA and fingerprint recovery techniques. This facilitated a reduction in harvesting the DNA and fingerprint evidence from 90 days to 3.2 days, a 96% reduction. The ABIN investigative test fire turn-around time now meets global best practice.

Example 4 – Establishment of an integrated vetting and triage unit:

Prior to establishment of the Vetting and Triage Unit (VTU), investigators were required to communicate with each relevant discipline area separately. For example, if the investigator had a threatening letter that required DNA, fingerprint and document examination, they would have to consult with three separate areas. Those areas operated to non-standardised case and item acceptance criteria and priority determination, sometimes leading to inconsistent and confusing outcomes. The VTU includes biology, fingerprints and major crime scene specialists creating a multi-disciplinary work group acting as a central receiving point for all service requests. Cases are now assessed from a 'whole of case' perspective before allocation of work to discipline specific areas. Feedback from investigators about this new approach has been extremely positive. Discussions between discipline specialists that previously very rarely occurred now transpire on a daily basis, optimising case decision-making. The approach sets a platform for enhanced alignment of all forensic disciplines to priorities set by the broader organisation.

FUTURE OPPORTUNITIES

It is important that any model remains flexible to account for future changes in the environment. While it is difficult to predict what these changes will entail, experience suggests that there are two areas that will be of significant impact to forensic science service delivery in the coming years.

FORENSIC INTELLIGENCE

The push for forensic science to offer more investigative opportunities has been developing steadily over recent years and will continue to do so into the future. Most jurisdictions have developed a forensic intelligence capability and it is anticipated that the next focus will be the integration of these systems at the national level. With an increase in cross-border and transnational crime, the need to share investigative information between jurisdictions will become increasingly important and a greater awareness of the forensic intelligence framework will be required. It is anticipated that inter-operability between jurisdictions in the areas of crime scene response and evidence recovery will be an important part of this process.

TECHNOLOGY DEVELOPMENT

Technology development has always been a significant driver of forensic science capabilities and it is anticipated that the move to more at scene technologies will have the greatest impact on crime scene response and evidence recovery. This has the potential to increase the expertise required from the multi-disciplinary practitioner and reduce the need for specialist practitioner attendance at the scene. The increase in artificial intelligence will also provide avenues to automate processes and procedures that previously required a multi-disciplinary or specialist practitioner. One important consideration in the timely uptake of technology developments is a quality framework that is conducive to this implementation and does not impede the ability to act swiftly when new opportunities arise.

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