

The role of forensic medical evidence in the prosecution of adult sexual assault

Antonia Quadara, Bianca Fileborn and Deb Parkinson

Obtaining forensic medical evidence from victim/survivors is often a central part of investigative and case-building efforts in sexual assault prosecution. Developments in the collection, analysis and interpretation of forensic medical evidence have significantly expanded the role and influence of such evidence in the criminal justice system. Despite the expectation that forensic medical evidence will have some role to play in a case progressing through the justice system, it is not clear how this type of evidence results in actual convictions, either via a plea, or finding of guilt at trial.

On the basis on the available evidence, this paper considers whether forensic medical evidence is associated with positive legal outcomes and the role of forensic medical evidence at key decision points in the justice process. Although the *progression* of cases may be enabled by forensic evidence, the legal requirements to prove the offence of rape and the customs of an adversarial justice system can undermine the probative value of forensic medical evidence in many contested cases (i.e., those that go to trial).

KEY MESSAGES ...

- National and international research presents a mixed picture of the association between forensic medical evidence and legal outcomes. Overall, forensic medical evidence was just as often associated with a positive legal outcome as not.
- The research on how forensic medical evidence is used in legal decision-making suggests that criminal justice actors—police, prosecutors, juries—use forensic evidence in a variety of ways to achieve justice and organisational outcomes, including to make assessments about the “strength” of sexual assault cases and possibility of a conviction.
- Little research specifically examines the role of forensic medical evidence in sexual assault trial settings. Given current debates about the interface between law and science, and ongoing debate about improving criminal justice outcomes for sexual assault matters, particularly where consent is the contested issue, this is a significant gap.



Australian Government

Australian Institute of Family Studies

Australian Centre for the Study of Sexual Assault

The Australian Centre for the Study of Sexual Assault aims to improve access to current information on sexual assault in order to assist policy makers and others interested in this area to develop evidence-based strategies to prevent, respond to, and ultimately reduce the incidence of sexual assault.

The Australian Centre for the Study of Sexual Assault is funded by the Australian Government Department of Families, Housing, Community Services and Indigenous Affairs through the Women's Safety Agenda. The Centre is hosted by the Australian Institute of Family Studies.

Contents

Introduction	2
Key terms	3
The impact of forensic medical evidence on outcomes in sexual assault prosecution	5
The role of forensic medical evidence in legal decision-making	13
Implications and questions arising from the research	21
Conclusion	25
References	26

The authors

Antonia Quadara is the Manager of ACSSA and Bianca Fileborn is Research Officer with ACSSA. At the time of writing, Deb Parkinson was a Senior Research Officer with ACSSA.

Acknowledgements

Many people provided their professional insights and expertise during the drafting of this paper. We would like to particularly acknowledge Angela Williams, Jo Spangarro, Alistair Ross, Gregor Urbas and Roberta Julian for sharing this with us.

ACSSA Issues are peer-review publications.

© Commonwealth of Australia 2013

With the exception of AIFS branding, the Commonwealth Coat of Arms, content provided by third parties, and any material protected by a trademark, all textual material presented in this publication is provided under a Creative Commons Attribution 3.0 Australia licence (CC BY 3.0) <creativecommons.org/licenses/by/3.0/au>. You may copy, distribute and build upon this work for commercial and non-commercial purposes; however, you must attribute the Commonwealth of Australia as the copyright holder of the work. Content that is copyrighted by a third party is subject to the licensing arrangements of the original owner.

The Australian Institute of Family Studies is committed to the creation and dissemination of research-based information on family functioning and wellbeing. Views expressed in its publications are those of individual authors and may not reflect those of the Australian Institute of Family Studies or the Australian Government.

ACSSA Manager: Dr Antonia Quadara

Australian Institute of Family Studies
Level 20, 485 La Trobe Street, Melbourne VIC 3000 Australia
Phone: (03) 9214 7888 Fax: (03) 9214 7839
Internet: www.aifs.gov.au/acssa

ISBN 978-1-922038-22-7

ISSN 1833-7856 (print)

ISSN 1833-7864 (online)

Edited by Lauren Di Salvia

Printed by Print Bound



... KEY MESSAGES

- This paper presents several implications for sexual assault prosecution, including:
 - whether there are mismatched expectations among the different criminal justice actors about forensic medical evidence;
 - whether there is an over-reliance on forensic medical evidence by investigators and prosecutors at the expense of other forms evidence; and
 - whether the availability of forensic medical evidence is a threshold issue for progressing with a case.

Introduction

Using forensic medical evidence in the prosecution of sexual assault encompasses two overlapping, though distinct, concerns. The first relates to the provision of forensic medical care for victim/survivors of sexual assault. The focus here is on what constitutes best practice in terms of forensic science, the medical and psycho-social needs of victim/survivors, and the service and workforce models that best balance these imperatives. The second concern relates to the use of forensic medical evidence in the legal system and its role as a form of legal—rather than scientific—evidence. This Issues Paper focuses on the latter. Specifically, it examines whether—and how—forensic medical evidence impacts on legal outcome in cases of adult sexual assault (such as charge, prosecution, or conviction).

In this paper, we review the national and international research¹ on the role of forensic

1 We searched in several key domains including legal scholarship; criminology; forensic science; medicine and social work. The types of research evidence collected included evaluations, meta-reviews, research studies, systems reviews, and commentary and analysis.

medical evidence in positive legal outcomes for sexual offences, such as the prosecution's decision to proceed, a plea, progression to trial, or a guilty verdict. We do this in two ways:

- reviewing the empirical studies that have sought to demonstrate an association between the presence of forensic medical evidence and specific types of legal outcome; and
- synthesising the research that explores the role of forensic medical evidence for criminal justice practitioners at key points in the sexual assault prosecution journey (i.e., investigation, prosecution, trial, and conviction).

In bringing this literature together, it is clear that the use of forensic evidence in the criminal justice system raises complex questions about its collection, its impact on legal outcomes, and its interpretation by forensic specialists, judges, and juries. In recent times, the types of evidence available have expanded (e.g., biometric evidence such as DNA) and the analysis has become more sophisticated. According to some research, there is a growing expectation held by victims, legal actors and juries that forensic medical evidence will (a) be available and (b) yield the “truth” about what happened in criminal events (Julian et al., 2011).

Despite the growing expectations of forensic evidence, the empirical research is not clear whether forensic medical evidence per se has a definitive role in, or association with, positive legal outcomes for sexual offence matters. In addition, reviews and commentary suggest a disjunction between the expectations of forensic medical evidence on legal outcomes on the one hand, and what is required to prove adult sexual offences within an adversarial justice system on the other. This disjunction raises challenging questions, particularly in relation to:

- barriers to case progression—that is, whether the availability of forensic medical evidence is a threshold issue for sexual assault matters to proceed; and
- what “counts” as evidence—whether there is a dependency on forensic medical evidence by investigators and prosecutors to signal “a strong case” at the expense of other forms of evidence.

These two issues need to be carefully considered and discussed, as they have broader implications for the kinds of sexual assault cases that do or do not progress through the justice system.

Following a brief description of key terms, this paper is divided into three sections. The first synthesises the available findings on whether forensic medical evidence is associated with positive legal outcomes in sexual assault prosecution. The second section focuses on how forensic medical evidence is used by legal actors in decision-making at various points of the justice process (e.g., investigation, prosecution, adjudication). The final substantive section shifts focus from forensic evidence to the legal context—legislation, procedure, and the rules of evidence—in which it is used. Here we focus specifically on proving the sexual assault offence within the adversarial justice process.

Key terms

Forensic medical evidence

In this paper “forensic medical evidence” or “forensic evidence” refers to the samples, specimens, records of injuries and emotional states of sexual assault victims (and sometimes

offenders) collected, documented and analysed by a forensic medical practitioner.² This typically includes:

- body fluids (e.g., blood, urine, semen);
- fibres and foreign debris (e.g., hair, fingernail scrapings, soil);
- injury to the anus and/or genitals (ano-genital injury) or to other parts of the body (extra-genital injury);
- clothing; and
- emotional presentation.

Such samples are used to establish recent sexual activity; identify or exclude suspects; prove or exclude a link between suspects and places or objects; establish the use of force or resistance and nature of injuries; and provide evidence of incapacitation due to alcohol or drug consumption (Du Mont & White, 2007). This paper is not intended to include an exhaustive coverage of all types of forensic evidence (e.g., firearms residue, fingerprints, handwriting, tool marks, impressions) and it is acknowledged that there may be omissions, or forms of forensic evidence to which the issues raised in this paper may not pertain.

Table 1: Types of forensic evidence

Type of evidence	Examples	Analysis	Purpose
Body fluids	Blood	Toxicology	Determine levels of substance consumption
	Semen and saliva	DNA	Identify suspect; link suspect to victim and/or crime scene; indicate sexual activity; indicate penetration
	Urine	Toxicology	Determine levels of substance consumption
Fibres and foreign debris	Hair and pubic hair	DNA	Identify suspect; link suspect to victim and/or crime scene
	Fingernail scrapings	DNA	Identify suspect; link suspect to victim and/or crime scene; may indicate resistance
	Clothing fibres, soil, carpet	Microscope visualisation, composition analysis	Link suspect to victim and/or crime scene; clothing may indicate use of force
Extra-genital injury	Bruising, abrasions, lacerations, bite marks	Visualisation, documentation & interpretation	May indicate use of force; may indicate resistance
Ano-genital	Tears, ecchymosis,* abrasions, redness	Observation, documentation & interpretation	May indicate use of force; may indicate penetration

* This refers to the flat area of haemorrhage under the skin that occurs after a blunt force injury that causes bleeding but does not break the skin (i.e., a bruise) that can occur both in the skin as well as in a mucous membrane.

Source: Adapted from Du Mont & White (2007) and Edwards & Gotsonis (2009)

2 A range of medical personnel collect forensic specimens including general practitioners, specialist forensic doctors and specialist forensic nurses.

These samples, specimens and observations are documented in the medical forensic examination. The primary purpose of these examinations is the care and welfare of the victim (Williams, 2004; World Health Organization [WHO], 2003). A second purpose is the collection and documentation of samples that may assist criminal prosecution (US Department of Justice, 2004).

Sexual assault

In this paper “sexual assault” refers to acts that reflect legal definitions. Although there is variation across states and territories in Australia, definitions of adult sexual assault or rape refer to penetration of the vagina or anus, or penetration of the mouth by the penis in circumstances where the person was not consenting (Fileborn, 2011). We recognise that legal definitions are quite narrow and exclude behaviours and acts that are elsewhere defined as sexual assault (e.g., in prevalence surveys such as the Personal Safety Survey (Australian Bureau of Statistics, 2006). However the purpose of this paper is to examine the role of forensic evidence in the legal response to sexual assault as defined in criminal statutes in Australia (See Fileborn (2011) for information on current sexual assault legislation).

Positive and negative legal outcomes

The criminal justice process involves many steps, for example: investigation; the decision to charge and the nature of the charge; prosecutorial screening of cases and their charges; subsequent decisions to proceed or not, or withdraw charges; the jury’s verdict; the sentencing judgement; and the decision to appeal. Research studies vary in how they have defined “positive legal outcome”, with some studies restricting it to laying charges, while other studies used obtaining a conviction as the measure.³ For the purposes of this paper, “positive legal outcome” or “positive case outcome” is used to refer to a sexual assault complaint progressing to the next stage of the criminal justice system. For example, if a case progressed from an initial report to police to the case being prosecuted, this would be considered a positive case outcome. Conversely, a negative case outcome would occur when a case is filtered out of the criminal justice system (also referred to as attrition). Therefore there are numerous points at which forensic medical evidence can have an impact on legal outcome, such as: the outcome of police investigation, the decision to prosecute, the selection of charges that will be prosecuted, the decision to accept a plea, proceeding to trial, and the outcome at trial.

The impact of forensic medical evidence on outcomes in sexual assault prosecution

A key question in this paper is whether forensic evidence is associated with positive legal outcomes. Findings from relevant studies are summarised below. It is important keep in mind

³ It is also important to note that some terms such as “charge-filing” (a US term) are not commensurate with Australian jurisdictions, as there are differences in the role of and relationship between police and prosecutors in each country. Australian jurisdictions (following the UK) maintain an emphatic separation between the investigative arm and the prosecutorial arm of the criminal law.

“Charges filed” refers to the charges that have been brought by the District Attorney’s (i.e., prosecutors’ office). Unlike Australian jurisdictions, District Attorney’s” offices will work closely with the arresting officers in reviewing the facts and deciding what, if any, charges will be filed against a person.

that the robustness and generalisability of these findings are affected by methodological limitations, which we discuss in a later section.

Association between forensic evidence and legal outcome

Forensic medical evidence and its role in positive legal outcomes

In this section we describe the findings of studies that specifically examined whether the availability of forensic medical evidence was associated with positive legal outcomes. The findings of these studies are summarised in Table 2.

The Uses and Impacts of Medico-Legal Evidence in Sexual Assault Cases: A Global Review (Du Mont & White, 2007) examined the relationship between forensic medical evidence and legal outcome. The review involved extensive literature reviews to locate relevant studies. These were drawn from electronic databases, government and non-government organisation websites, and through key researchers and leading academics. Findings related to the purpose of medico-legal evidence, its impact on legal outcome, and the socio-cultural factors influencing its use were covered in the report.

Du Mont and White (2007) located 13 studies that specifically analysed the presence of forensic medical evidence and legal outcome. Most were based in the US or Canada. The studies had different definitions of “legal outcome”. Most included conviction within this definition, however a few defined it as “charges filed” and “trial/no trial”. They also recorded different types of forensic evidence:

- Two of 13 studies examined all four categories of forensic evidence (general injury; ano-genital injury; biological samples; and emotional presentation);
- Eight of 13 studies examined three categories (general injury; ano-genital injury; and biological samples);
- Two studies examined two categories (general injury and biological samples; and general injury and genital injury); and
- One study examined only the impact of genital injury on legal outcome.

Notably, none of these studies were conducted in Australia.

In relation to *general physical injuries* the review found that six of the 12 studies that included general injury demonstrated a significant association between victim injury and a positive legal outcome, specifically:

- three studies demonstrated a significant association between *severe violence or injury and conviction*;
- two showed an association between *mild to severe injury and laying charges*; and
- one study demonstrated an association between *physical trauma (abrasions, contusions, lacerations, ligature, burn and bite marks) and laying charges*.

In relation to ano-genital injury, only two studies found a positive association. In both studies, the documentation of ano-genital injury was associated with the filing of charges. Interestingly, no study included in the review found a positive relationship between legal outcome and the presence of sperm, semen or saliva samples, indicating that the availability of this type of forensic evidence is not obligatory for a case to successfully proceed through the justice system or to obtain a conviction. Indeed, some studies concluded that on its own “medico-legal evidence appears to be of minimal importance to the courts” (Du Mont & White 2007, p. 28).

Table 2: The association between forensic evidence and legal outcome—study findings

Studies that specifically examined the relationship between forensic evidence and legal outcome

Study	Details	Key findings
Du Mont & White (2007) International	Meta-analysis of studies published between 1985–2004 that specifically examined the association between forensic evidence and legal outcome. Only those studies that based their results on total number of cases reported to police were included, resulting in a total of 13 studies. All but one study included general physical injury.	<ul style="list-style-type: none"> ▪ 6/12 studies found a significant association between general physical injury and legal outcome. Specifically: <ul style="list-style-type: none"> - physical trauma and conviction ($n = 1$) - severe violence or injury and conviction ($n = 3$) - moderate or severe injury and laying charges ($n = 1$) - mild to severe injury and laying charges ($n = 1$) ▪ 2/13 studies found a significant association between ano-genital trauma and laying of charges. None found an association between this type of evidence and successful prosecution. <p>Conclusion: Factors other than the availability of medico-legal evidence are found to be influential in shaping legal outcomes such as victim credibility or the characteristics of the assault.</p>
Johnson et al. (2012) (see also Peterson et al., 2010) United States	602 incidents of rape randomly selected from police data. Analysis of sexual assault part of a larger study. Prospective design.	<ul style="list-style-type: none"> ▪ Forensic evidence was gathered in 64% of incidents, of which half (54%) was biological. ▪ Less than a third of sexual assault kits were analysed in laboratories ▪ Forensic predictors of legal outcome: <ul style="list-style-type: none"> - Crime scene evidence and lab analysis both predictive of arrest (but only 1.6% of evidence was analysed prior to arrest) - No association with referral to prosecutor - Lab examined evidence and medical treatment associated with charging (suggested as proxy measure for injury) - Forensic evidence not significantly associated with conviction <p>Conclusion: The probative value of forensic evidence is inextricably linked to the circumstances of the assault (e.g., victim–offender relationship; offender tactics; location found)</p>
Hagemann et al. (2011) Norway	Police files of 185 female victims. Forensic medical files were available for 101.	<ul style="list-style-type: none"> ▪ General physical injury documented in 49%; most were categorised as “minor” ▪ Ano-genital injury was documented in 14 cases ▪ Trace evidence was analysed in one-third of cases <p>Conclusion: Prosecution was common in cases with a forensic examination but this association was not statistically significant.</p>
Jewkes et al. (2009) South Africa	1,547 cases with a medical examination. Included both child (596) and adult (951) victims.	<ul style="list-style-type: none"> ▪ DNA evidence rarely available ▪ No statically significant association between presence of injuries and suspect arrest ▪ Injuries were not associated with progression to trial ▪ Non-genital or ano-genital injury or both was strongly associated with conviction <p>Conclusion: In a context of strained resources and system inefficiencies DNA should not be a priority in rape investigation. General and genital injury may be useful in court to corroborated victims’ testimony.</p>

Table 2: The association between forensic evidence and legal outcome—study findings (continued)

Study	Details	Key findings
Campbell et al. (2009) United States	Sample drawn from the Sexual Assault Nurse Examiner program. A total of 137 cases met the criteria.	<ul style="list-style-type: none"> ▪ Time between assault and medical examination inversely related to case progression; cases exceeding 20 hours to examination were less than half as likely to progress ▪ Case progression was associated with: <ul style="list-style-type: none"> - DNA evidence; and - ano-genital or physical redness ▪ Other types of forensic evidence (abrasions, tears, bruises, foreign matter) were not associated with case progression (partly attributed to the low rates documented) <p>Conclusion: Controlling for victim and assault characteristics, forensic medical evidence was still able to predict significant variance in case progression</p>
Ingemann-Hansen et al. (2008) Denmark	307 cases of sexual assault reported to police. Legal outcome known for 277. 216 (70%) had a forensic examination	<ul style="list-style-type: none"> ▪ 78% of victims had injuries, the majority being physical injury ▪ No forensic findings were associated with conviction, however use of severe coercion (strangulation, use of weapons) by the assailant was the only determinant associated with conviction (after adjustment) <p>Conclusion: Forensic medical evidence is of low sensitivity in relation to sexual assault and cannot by itself reveal whether the complaint is a criminal offence</p>

More recent research continues to show varied results. Of the studies using a retrospective design, Hagemann, Stene, Myhre, Ormstad, and Schei (2011) found that prosecution was more likely when there was forensic medical evidence available, however this was not a statistically significant association. A South African study found that DNA was rarely available and that forensic evidence of injury (general and ano-genital) was *not* associated with arrest or progression to prosecution, but *was* strongly associated with conviction (Jewkes et al., 2009). The authors concluded that such evidence may corroborate the victim’s testimony (Jewkes et al., 2009). However, another US study found the inverse—DNA evidence and ano-genital injury (specifically redness) was associated with progression, although its impact on convictions was not clear (Campbell, Patterson, Bybee, & Dworkin, 2009). Finally, Ingemann-Hansen, Brink, Sabroe, Sorensen, and Charles (2008) found that despite three-quarters of their sample having documented general or ano-genital injury, forensic findings were not associated with conviction; however, use of severe coercion tactics by the offender, such as strangulation or use of weapons, was.

We found only one study that used a prospective design to examine the presence, role and impact of forensic evidence on legal outcomes for five serious offence categories, including rape (Johnson, Peterson, Sommers, & Baskin, 2012; Peterson, Sommers, Baskin, & Johnson, 2010). The researchers followed rape cases in five US jurisdictions from the time of police incident report (during 2003) to final court disposition. They aimed to catalogue the kinds of forensic evidence collected at crime scenes and identify which forms of forensic evidence contributed most frequently to successful case outcomes. The sample was comprised of a total of 602 rape incidents. Forensic evidence was available in almost two-thirds (63.8%) of incidents. Biological⁴ and natural/synthetic materials (e.g., bindings, clothing, carpet) were

4 Biological evidence included bodily fluids, DNA, vaginal and anal swabs, bite marks, and sexual assault kit samples.

the most common forms of evidence collected. Overall, a third of incidents had evidence submitted for examination. Of these, 18.6% were examined.⁵

Initial analysis showed that sexual assault cases with forensic evidence were statistically more likely to end in arrest, charge and conviction. The percentage of arrests referred to the prosecutor was not significantly different in cases with and without forensic evidence. Regardless of whether forensic evidence was present, the authors noted a significant “funnelling effect” of cases as they progressed through the stages of justice system. When the data were analysed to see if forensic evidence predicted outcomes, the authors concluded that it predicted arrest and charge but not conviction. Prosecutors were more likely to file charges when the victim had “suffered real physical harm” and when evidence against the suspect was strong (e.g., victim’s willingness to proceed, arrest, and presence of forensic biological evidence). The strongest predictors of conviction were the victim’s willingness to proceed with a complaint, direct arrest techniques, and medical treatment of the victim.

Johnson et al. (2012) further observed that a key issue was the prosecutorial screening of cases and the focus on “convictability”:

Similar to previous studies, the results of the present project indicate that prosecutors exercise a great deal of discretion and reject a significant percentage of cases at screening ... case rejections are motivated primarily by prosecutors’ attempts to “avoid uncertainty” ... all prosecutors, regardless of jurisdiction, shared a primary concern about case convictability. (pp. 213–214)

Therefore, the initial association between forensic evidence and conviction was more a reflection of prosecutors’ rejection of cases that seemed “ambiguous” because of the circumstances of the assault (e.g., victim-offender relationship or offender tactics) rather than a reflection of forensic evidence per se.

For Johnson and colleagues (2012) this pointed to a broader issue—the contrast between what they saw as the “theoretical potential” of forensic evidence and the “empirical realities” of prosecuting sexual assault in which consent is often the point of contestation. Theoretically, forensic evidence may serve the following purposes:

- functioning as a mechanism to identify or confirm the identity of potential perpetrators and link them to the crime scene⁶ (see also Haesler, 2006);
- corroborating the victim’s account of a sexual assault in a court of law (see also Haesler, 2006);
- determining the occurrence of recent sexual activity; and
- establishing use of force or resistance (Du Mont & White, 2007).

If forensic evidence were capable of serving these functions, it would seem reasonable to conclude that the introduction of forensic evidence at court should strengthen the likelihood

... the contrast between what they saw as the “theoretical potential” of forensic evidence and the “empirical realities” of prosecuting sexual assault in which consent is often the point of contestation

5 The researchers in this study do not make clear how physical injury (general and ano-genital) has been classified. Depending on protocols in each jurisdiction, such documentation may be contained in sexual assault kits.

6 While this is clearly also important in earlier stages of the criminal justice process, such as police investigation, evidence pointing to the identity of the perpetrator is also pertinent to the criminal trial uniquely in that it prevents a successful defence strategy based around the identity of the accused (i.e., “it wasn’t me”), though the resulting shift to the issue of consent is not necessarily of benefit to the complainant (Findlay & Grix, 2003).

of a positive legal outcome (in this case conviction). However, as demonstrated, how effectively forensic evidence serves these functions in practice is uncertain; different studies have come to different conclusions about this. In part, this may have to do with the type of forensic evidence being presented and its purpose in the case. For example, while DNA evidence in particular can function to identify an individual with a (generally) high degree of certainty, and can link an individual to a crime scene, it is not always apparent *how* an individual's DNA came to be at a crime scene (Haesler, 2006). Likewise, in relation to sexual offences, DNA evidence is unable to reveal anything about the issue of consent, though it can assist in demonstrating that a sexual act occurred. Therefore, DNA and forensic evidence alone is generally not sufficient evidence to base a conviction on, and tends to form one facet of the evidence presented by the prosecution in court (Haesler, 2006).

The disconnect between the “theoretical potential” of forensic evidence and the “empirical reality” of sexual assault prosecution may also be explained by the role of factors other than forensic evidence. These are examined in more detail below.

DNA evidence is unable to reveal anything about the issue of consent, though it can assist in demonstrating that a sexual act occurred ... This disconnect between the “theoretical potential” of forensic evidence and the “empirical reality” of sexual assault prosecution may also be explained by the role of factors other than forensic evidence.

The role of multiple factors in case progression (including forensic medical evidence)

Du Mont and White (2007) looked at a further 31 studies published between 1978 to 2005 that examined a range of factors (including forensic evidence) and legal outcomes. Table 3 provides a summary of this group of studies published since 2000. The majority (21) were conducted in the US, four in Canada, three in the UK and two in Australia.⁷ Like the studies that looked only at forensic evidence, these studies show mixed results. Overall, 15 studies did not find a significant association between forensic evidence and positive legal outcome. Two had mixed findings, where some forms of evidence such as physical evidence (e.g., blood, semen, or hair) were associated with positive outcomes compared to other forms of evidence such (e.g., injury evidence). Fourteen studies identified an association between forensic evidence and positive legal outcomes. As stated earlier, “positive legal outcome” is defined in different ways in the research, making it difficult to know just where forensic medical evidence has the most—or the least—impact.

Significantly, Du Mont and White (2007) found that that a range of “other” (i.e., non-forensic/medical) factors, such as those relating to a victim's credibility and status as a “deserving” victim, were much more influential in determining the likelihood of a case progressing through the criminal justice system and obtaining a positive legal outcome in terms of a conviction. Some of the factors identified as having a detrimental impact on case outcome included:

- victim age and socio-economic status—with older, poorer women less likely to be associated with a positive legal outcome;
- character and reputation—such as sexual promiscuity, being a sex worker, having a psychiatric history, having a drug abuse problem or criminal record;
- doing something that could be perceived as having “provoked” the attack through “risk-taking behaviours”—such as hitchhiking or drug/alcohol use;

⁷ These were Lievore (2004) and Briody (2002–03).

Table 3: Factors associated with positive legal outcomes including forensic medical evidence

Studies that looked at a range of factors associated with legal outcome including forensic evidence (2000–2005)		
Study	Details	Key findings
Beichner & Spohn (2005, cited in Du Mont & White, 2007) United States	Case files from Miami and Kansas City for the years 1996–1998 examined.	<ul style="list-style-type: none"> Of 399 cases, charges were laid in 58% of cases. Injury occurred in 30% and physical evidence was available in 55%. <p>Conclusion: Both the presence of injury to the victim and the availability of physical evidence were related to the <i>decision to fully prosecute</i>.</p>
Lievore (2004) Australia	Examination of prosecutorial decisions for 141 sexual offence cases across 5 Australian jurisdictions referred to DPP between 1999 and 2000.	<ul style="list-style-type: none"> 51% of victims had sustained physical injuries (from mild to severe) 39% of defendants had additional evidence linking them to the offence and corroborating the victim’s story. Most common type of evidence was DNA. Other evidence included: fingerprints, eyewitness accounts, objects found at the scene, video footage, statements made by the defendant, telephone records. <p>Conclusion: Presence of physical injury and additional evidence did not, on their own, predict progression versus withdrawal of cases. Presence of additional evidence was related to <i>guilty pleas or verdicts</i></p>
Lea, Lanvers & Shaw (2003, cited in Du Mont & White, 2007) England	379 cases of rape or attempted rape reported to police between 1995 and 2000 were examined.	<ul style="list-style-type: none"> Other than the injuries sustained through the sexual assault itself no additional injuries were reported in 64% of cases. Slight injuries were sustained in 33%, moderate injuries in 1% and severe injuries in 2%. <p>Conclusion: Injury was not shown to predict legal outcome.</p>
Briody (2002–03) Australia	Examined role of DNA in processing sexual assault cases. A total of 200 cases that had occurred between 1994 and 1999 were examined. None were cases where consent was in issue.	<ul style="list-style-type: none"> Multivariate analysis showed that DNA evidence was related to a <i>jury finding of guilt</i>. While DNA evidence was related to jury finding of guilt, it did not facilitate cases reaching the courts or defendants pleading guilty. <p>Conclusion: Other tangible evidence, such as signs of forced entry, was also found to be significantly associated with conviction.</p>
Spohn & Holleran (2001, cited in Du Mont & White, 2007) United States	Case files in a sample of 526 were examined (from Kansas and Philadelphia). Cases were categorised by the type of relationship between victim and perpetrator.	<ul style="list-style-type: none"> Injury was documented in 26% of cases and physical evidence in 58%. Victims of partner sexual assault were more likely than those assaulted by acquaintances and strangers to have sustained “collateral injuries” such as burns, bruises, cuts, and internal injuries. However, there was a greater presence of physical evidence such as semen, blood, clothing, bedding, and/or hair in cases of assault by strangers. <p>Conclusion: Only the availability of physical evidence to corroborate the victim’s story was positively related to <i>charge filing</i>.</p>
Spohn, Beichner & Davis-Frunze (2001) United States	140 cases of sexual battery in Miami where a suspect had been arrested were examined.	<ul style="list-style-type: none"> Trauma such as bruises, cuts, burns and internal injuries had occurred in 29% cases. Physical evidence such as semen, blood, clothing, bedding, and/or hair was available in 56%. <p>Conclusion: cases in which victims had sustained injuries were <i>more likely to be prosecuted</i>.</p>
Du Mont & Mohr (2000) Canada	Hospital charts of 187 female victims of sexual assault were examined.	<ul style="list-style-type: none"> Injuries occurred in 71% of cases. Forensic evidence such as seminal stains, saliva, or non-motile sperm from the victim’s body and/or the collection of blood, hair, fibres, etc. collected from the scene was documented in 82% of cases. <p>Conclusion: The presence of forensic evidence was not significantly associated with <i>charge-laying</i>.</p>

- failing to resist either verbally or physically; and
- not reporting the sexual assault promptly to police.

Conversely, the following factors were more likely to be associated with a positive outcome legally for victims:

- a suspect having prior charges or convictions;
- multiple charges or a greater number of charges;
- an act involving penetration;
- physical force or verbal coercion;
- use of weapons; and
- corroborating testimony of witnesses.

More recently, a five-country study⁸ examined patterns of conviction and the factors associated with the attrition of rape cases from the legal system over two reform periods—an “early period” from 1970–1989, and a “late period” between 1990 and 2007 (Daly & Bouhours, 2010). The study examined decision points at the various stages: police investigation, prosecution, and court hearings.⁹ The authors found that during the early period, the victim’s character and credibility was the most common factor influencing police and court decisions (89% of 33 studies). The next most common factor was the presence of injuries (67%). Forensic or witness evidence was a factor in 45% of studies. In the latter reform period only 35% of studies identified the influence of victim characteristics on police and prosecution/court outcomes. Further, over the period reviewed, and based on the available studies, it appeared that forensic and witness evidence had an increased influence at the police stage compared to prosecution or court (although this was not a statistically significant increase).

One of the Australian studies included in Du Mont and White’s (2007) review analysed prosecutorial outcomes in 141 cases. Lievore (2004) found that cases were significantly more likely to proceed to trial or sentencing when:

- the victim physically or verbally expressed non-consent;
- the victim was injured during the attack;
- there was evidence linking the defendant to the assault;
- the defendant used force during the assault;
- the assault was severe;
- the defendant was a stranger; and
- the defendant was non-caucasian.

Although there was no specific variable for “forensic medical evidence”, victim injury, severity of the assault, and use of force could be seen as proxies for this. Cases not displaying these factors were more likely to not proceed. However, no single factor predicted cases proceeding or being withdrawn. Instead, Lievore (2004) found that some variables were correlated with each other in predicting case progression, namely “force”, “non-consent” and “victim injury”. Further analysis showed that the most significant relationship was between force and non-consent, that is, a case was less likely to be dropped if the victim was forced and actively expressed non-consent.

8 The countries were Australia, Canada, England and Wales, Scotland the United States. The researchers drew on: victimisation studies, recorded crime and court statistics; and studies looking at factors associated with legal outcomes. Thirty-three studies out of a total of 75 focused on the latter.

9 Due to different meaning attached to “prosecution” in the studies, which sometimes included court, the authors combined prosecution and court into one category.

These findings suggest that stereotypical beliefs around what constitutes “real” rape (i.e., violence, involves penetration) and who is a “deserving” victim (i.e., someone who is “chaste” or attempts to resist her attacker), rather than the availability of forensic or medical evidence availability, continue to have a profound and significant affect on decision-making processes and case outcome for sexual offences.

... stereotypical beliefs around what constitutes “real” rape (i.e., violence, involves penetration) and who is a “deserving” victim (i.e., chaste, attempts to resist her attacker), rather than the availability of forensic or medical evidence availability, continue to have a profound and significant affect on decision-making processes and case outcome for sexual offences.

Studies such as Briody’s (2002–03) have demonstrated a link between DNA evidence and conviction, and a link between “positive” elements of a case, such as tangible evidence of the offence (physical injury, forced entry into premises etc.), and conviction. It is unclear however, whether there is a relationship between DNA evidence *and* tangible evidence (demonstrating that the offence fits the “real rape” paradigm) *and* conviction. There is little research on the joint influence of the rape myths listed above and forensic evidence. For instance, is a case with “positive” elements *and* forensic evidence more likely to result in a conviction than a case with positive case elements alone?

However, Briody’s findings indicated that stereotypical beliefs about sexual violence play a role in cases either not proceeding to court or the defendant not being convicted. For instance, cases where the complainant had consumed drugs or alcohol were less likely to proceed to trial. Likewise, of the six cases sampled *with* DNA evidence where the defendant *was not* convicted, in five of these the complainant was intoxicated at the time of the offence and the complainant and defendant were previously acquainted (Briody, 2002–03, p.176). This suggests that the influence of rape myths (e.g., that rape is only committed by a stranger/women cannot be raped by someone they know or are in a relationship with) and perceptions of victim credibility (that women affected by drugs or alcohol are not reliable witnesses/were “asking for it”/are sexually promiscuous) are likely to be at play.

Summary of the research evidence

There is an increasing availability of, and reliance on, forensic evidence (Bornstein, 2004; Daly & Bourhours, 2010; Du Mont & White, 2007; Findlay & Grix, 2003), with DNA evidence in particular “becoming the pathway to conviction” (Findlay & Grix, 2003, p. 280). Despite this perception of increased reliance, the impact of such evidence on sexual assault case progression and outcomes is unclear.

Over and above the methodological variations between studies, in general, forensic medical evidence was associated with positive a legal outcome (however defined) in about half of the studies. In other words, there is not a definitive answer to the question of whether forensic medical evidence has a positive impact on legal outcome. Moreover, there is nothing to suggest that its role is absolute—it appears that a range of other evidentiary and credibility factors also have a role to play.

Further, not all forms of forensic evidence are equally useful. Evidence of injury (particularly severe or serious injury) is most often associated with a positive legal outcome. Other forms such as biological evidence do not appear to have any impact on legal outcomes. In terms of the type of legal outcome associated with forensic evidence, research findings are inconsistent

and contradictory. Some studies find that forensic evidence is associated with arrest and charge, while others find an association between forensic evidence and conviction (whether by plea or verdict).

An important message arising from the research is that no single factor (e.g., the presence of forensic medical evidence) predicts case progression or positive legal outcomes. As noted by both Johnson et al. (2012) and Lievore (2004), there are complex interactions between numerous factors—including forensic evidence—which legal decision-makers such as investigators and prosecutors assess through the lenses of “discretion” and “convictability”.

... no single factor predicts case progression or positive legal outcomes ... there are complex interactions between numerous factors—including forensic evidence—which legal decision-makers such as investigators and prosecutors assess through the lenses of “discretion” and “convictability”.

Limitations in the evidence

Researchers have noted that there is little published research that examines the uses and effects of forensic evidence and what has been published is dated (Peterson et al., 2010). In relation to sexual assault, the authors of a recent meta-analysis observed that the relationship between the availability of forensic evidence and positive case outcome is unclear; findings are either inconsistent or contradictory (Du Mont & White, 2007; see also Johnson et al., 2012). In addition, Du Mont and White expressed caution for the mixed results because of the limitations of the evidence, noting that:

There is a striking paucity of information and evaluative studies from which to assess the impact of medico-legal evidence on sexual assault cases. The design limitations of the research conducted to date are such that it is not possible to draw robust conclusions (2007, p. 2).

Some of the design limitations stem from the retrospective nature of reviews. This means that data could have been compromised as a result of: incomplete recording; relevant variables may not have been available; attrition may have impacted on analyses’ statistical power; or there may have been variations in methods of visualising and recording forensic evidence. Further, most studies were conducted in large urban centres in industrialised countries such as the United States, Canada, Norway and Australia, meaning that their generalisability to different settings is limited.

Over and above these limitations, we would add that specificity of the legal context must be kept in mind in interpreting the implications of study findings for Australian jurisdictions. In many US jurisdictions, for example, physical force is an explicit component of the definition of rape and also shapes the notion of consent. This is not the legislative situation for most Australian states and territories (force or threat of force is but one circumstance that would negate consent). There are few studies that examine the role of forensic medical evidence on legal outcomes in Australian jurisdictions.

The role of forensic evidence in legal decision-making is examined in the following section.

The role of forensic medical evidence in legal decision-making

Between the crime scene and the courtroom, decisions are made that either progress or stop a sexual assault case from proceeding through the criminal justice system. This process comprises a number of decision-making points, such as:

- victim/survivors' decision to report offence;
- victim/survivors' decisions to proceed with a complaint;
- police action on reporting (investigation, decision to proceed with charges or not, authorisation of brief of evidence);
- the Director of Public Prosecution's (DPP) assessment of the brief and decision to continue proceedings;
- the DPP's charging decision (this may include efforts to obtain a guilty plea); and
- the DPP's decision to continue a contested case to trial (this may include the decision to discontinue after the committal hearing) (Heenan & Murray, 2006; Lievore, 2004).

Following this are the decisions the defence might make in relation to the brief of evidence upon which their client has been charged (e.g., they decide to challenge aspects of the evidence) and the decision-making of jurors in relation to the facts of the case and the judge's directions.

Research specifically exploring the role of forensic medical evidence in legal decision-making on sexual offence matters is scant. The biggest area of investigation has focused on juries' understanding of forensic evidence and the impact of what is being called "the CSI effect" (see. Below we draw on the available research to consider the role of forensic evidence in the following: victim/survivors' decision to report; police investigation; prosecutorial decision-making; and jury decision-making.

The role of forensic evidence in victim/survivors' decision to report

A common observation in the research literature is that the forensic examination can be a very difficult experience for victim/survivors in the immediate aftermath of sexual assault (Campbell, 2006). Victim/survivors have identified busy public settings such as emergency departments, lengthy delays, and victim-blaming or ill-informed responses from forensic examiners as key sources of distress and secondary victimisation, which are amplified by the highly intimate nature of forensic medical examinations (Maier, 2008). Significant efforts have been made to improve victim/survivors' medical care and forensic examination. Such efforts include the establishment of best practice protocols and principles (US Department of Justice, 2004; WHO, 2003) specialist training (e.g., specialist nurse examiners and forensic doctors, see Boyd, 2008) and multidisciplinary, integrated or "wrap around" crisis care service provision. Despite the potential for distress, medical and forensic examinations can have a positive and therapeutic role to play. From a therapeutic perspective, the examination can increase victim/survivors' feelings of safety, being "normal", and being resilient (Campbell, Patterson, Adams, Diegel, & Coats, 2008; Du Mont, White, & McGregor, 2009).

While the process of having an examination may be of importance and benefit to some victim/survivors, it is not clear whether the availability and collection of forensic plays a significant role in influencing victim/survivors' decisions to report to police. Survivors also have a justice orientation towards the examination, as it can be a way for victims to empower themselves to "do something" about the assault and see the perpetrator brought to justice. For example, in a qualitative study exploring victim/survivors' perceptions of the

forensic examination, three-quarters of the sample hoped that the evidence collected would assist in obtaining justice. Specifically, they hoped that it would:

- get evidence or proof of the assault;
- force the assailant to take responsibility for their actions; and
- prove the assailant's guilt (Du Mont et al., 2009).

In terms of participation in the legal process, examinations can be seen by victim/survivors as showing that they were not falsely “crying rape” and providing “objective proof” of what had happened (Du Mont et al., 2009; Fehler-Cabral, Campbell, & Patterson, 2011). Some participants in these studies felt that forensic medical evidence would be necessary for, or very beneficial to, successful prosecution, “giving them a leg to stand on” in the justice process. There was also awareness that such “proof” was expected and desired by legal practitioners prosecuting their case. In the absence of documented injury, some participants speculated that they would not proceed because they understood their cases to be weak from the perspective of the justice system.

It is not clear how transferable these findings are to an Australian context, either in terms of victim/survivors' expectations about the power of forensic medical evidence or whether the lack available evidence would deter victims from pursuing a justice response. While Lievore (2004) found that “lack of proof that the incident happened” (p. 35) was a barrier to reporting or disclosing sexual assault, it is not clear what constitutes proof in this instance, or what influence the presence/absence of different types of forensic evidence may have on decisions to report.

There is some evidence to suggest that victim/survivors of stereotypical (stranger) sexual assaults are more likely to seek forensic medical and other care and support services in the immediate aftermath of the assault. In relation to victim characteristics, having children and the perceived life-threat or severity of attack are strongly correlated with formal support-seeking (Ullman & Filipas, 2001). An unknown assailant and sustaining injuries were the assault characteristics associated with formal support seeking (Millar, Stermac, & Addison, 2002; Ullman & Fillipas, 2001).

Millar et al. (2002) found that sustaining injuries, aggravated sexual assault, verbal threats, coercion or confinement, and an unknown assailant were related to decisions to seek treatment within 48 hours. This suggests that particular types of sexual assaults are associated with formal support-seeking, including forensic exams.

However, there does not appear to be any Australian research about the types of sexual assaults likely to be forensically documented. It is not clear if this greater propensity to seek support also correlates with greater likelihood of reporting to police. If there is an expectation of forensic medical evidence in order to prosecute, the evidence presented here suggests that non-stereotypical sexual assaults (i.e., acquaintance, partner assaults) may be disadvantaged from the very beginning of the criminal justice evidence gathering process.

Forensic evidence and police investigation

The investigation phase is a significant point of attrition—that is, police or victim/survivors deciding to not proceed with a case. Figures suggest that approximately two-thirds of cases do not proceed beyond the stage of investigation (Daly & Bouhours, 2010). The existence or absence of sound forensic evidence can be a critical factor at this stage (Campbell, Bybee,

Ford, & Patterson, 2008; Morrison, 2008) and the absence of forensic evidence because of a victim's refusal to undergo a forensic medical examination was "often a factor in cases not being proceeded with" (Du Mont & White, 2007, p. 45). Heenan and Murray (2006) found that police were more likely to lay charges where the victim/survivor had undergone a forensic medical examination.

The role of forensic evidence during investigation is multi-faceted. First, forensic evidence can assist police in building their case. Campbell, Bybee et al. (2008) found that when a victim agreed to a forensic medical examination, police sometimes intensified their efforts to find other evidence. This may be because doing so indicated "good faith", commitment, or sincerity by the victim/survivor as suggested above. Alternatively, police may use the emerging forensic findings to inform their investigation. As a detective supervisor explained in Campbell and colleagues' (2008) US study:

They [forensic nurses] tell you this looks like an injury caused by a coat hanger. You get the search warrant, you go to the house, low and behold there is a wire hanger that is, you know, bent. [3A05] (p. 60)

Police may also feel more confident about building a case knowing that evidence would be forthcoming, and they could put more investigational effort into other aspects of the case, such as collecting other evidence from suspects, witnesses and the crime scene (Campbell, Bybee et al., 2008).

These roles reflect current discussions about "forensic intelligence" (Roux, Crispino, & Ribaux, 2012), in which forensic science and evidence collection is not only about "what happened" for the sake of adjudication (i.e., determining legal culpability), but is collected and interpreted to inform the investigation itself. The rigor, comprehensiveness and specialist training of sexual assault forensic examiners is cited by police as enabling them to hone their investigation and build a robust case for prosecution (Campbell, Bybee et al., 2008).

Finally, other research suggests that forensic medical evidence—particularly the presence of physical injury—influences investigators' perceptions of the complainant and the suspect (Jordan, 2004). McLean and Goodman-Delahunty (2008) surveyed police in two jurisdictions about the influence relationship and physical injury had on police decision-making. When physical injury was present, police officers were more likely to perceive the complainant as credible, less likely to believe the suspect, less likely to hold the complainant responsible, more likely to believe the complainant was sexually assaulted, and more likely to charge.

It is important to note that a range of other factors can influence the weight of forensic evidence for police decision-making, such as:

- organisational factors (e.g., resourcing, specialisation and training, and leadership);
- the strength of witness testimony;
- perpetrator response to investigators
- the implicit or explicit criteria against which a brief of evidence is authorised before it is referred to the office or department of public prosecutions; and
- the nature of the charge and the court in which the matter is to be heard.

Prosecutorial decision-making

Guidelines on prosecutorial decision-making highlight two major elements guiding the decision to proceed with prosecution:

- *Sufficient evidence*: this is a consideration about whether the evidence can justify prosecution. This includes witness credibility and competence, admissibility of evidence and lines of defence available. Forensic medical evidence such as the DNA of the defendant, or physical “evidence”, such as bruising and other forms of physical harm, would go to the issue of evidentiary sufficiency (Briody, 2002–03; Lievore, 2004).
- *Public interest*: whether the case is in the public interest refers to a number of factors including the seriousness of the offence, the need to uphold public confidence in the criminal justice system, and the likelihood of the perpetrator re-offending (Lievore, 2004).

The evidence is weighed in terms of whether there are “reasonable prospects” of securing a conviction (Lievore, 2004). It is important to note that this is a relatively undefined, amorphous term. In relation to sexual assault, victim credibility, the severity of the crime, presence of physical injury, and the way a judge and jury are likely to view the complainant and narrative of the sexual assault are part of the equation in evaluations of “convictability” (McLean & Goodman-Delahunty, 2008; Taylor, 2007).

Forensic evidence can provide corroboration for other types of evidence such as victim testimony. Findlay and Grix (2003) found that DNA evidence was used as another element of the prosecution case that required corroboration. Prosecutors also had perceptions that DNA has a role in increasing convictions. A DNA match has the power to “significantly increase convictions even in a weak circumstantial case” (Goodman-Delahunty & Hewson, 2010, p. 4). As the NSW DPP stated in 2002:

To a prosecutor, DNA evidence may mean the difference between an arguable case and a case against which there is no reasonably sustainable argument. (Cowdery, 2002, p. 2)

Recent research by Campbell, Bybee et al. (2008) illustrated the way some prosecutors viewed the role of forensic evidence in prosecutorial decision-making. Prosecutors were asked about how they viewed the Sexual Assault Nurse Examiners’ [SANE] contribution to building a strong case. Their responses revealed that the forensic evidence collected and SANE’s forensic report play an important role in giving prosecutors confidence about the case. Like victim/survivors, prosecutors regard evidence of injury as corroboration and proof:

when I get a case on my desk, [and there is a] SANE report, there is injury ... I’ve got a good case. I’ve got corroboration, I’ve got medical ... I’ll use that with talking to the defense attorney ... I think it is the corroboration and the proof. The proof that the jury needs to say that it happened. (Campbell, Bybee et al. 2008, p. 48)

Ultimately, it is their [victims’] testimony that they [the jury] are going to have to decide on. Obviously if we get some trauma to the vaginal area that coincides with what they did, whether it be a finger they used or penis they used or object they used, it definitely obviously lends them credibility in her statement. (Campbell, Bybee et al. 2008, p. 51)

In these views, forensic medical evidence has three purposes. First it provides corroboration of the victims’ accounts, making the case stronger overall. Second, it can provide prosecutors with ammunition to secure a plea rather than taking a matter to trial. Finally, where the matter does go to trial, it provides the jury with some certainty about what happened or the credibility of the victim.

These factors would suggest that the availability of forensic evidence would have a positive impact on case progression. With reference to sexual assault, “DNA evidence is becoming the pathway to conviction” (Findlay & Grix, 2003, p. 269; see also Bornstein, 2004; Du Mont & White, 2007). However, Findlay and Grix (2003) warned that DNA evidence was not just like any other “piece of the circumstantial evidence puzzle”:

the compelling nature of DNA gives it a special relevance for a circumstantial case ... [for some prosecutors] DNA becomes the centre piece of a circumstantial case and only requires corroboration of the slightest form to confirm its significance. (p. 272)

As noted in the previous section, legal decision-making involves evaluating how a range of factors—offence-based and victim-based—interrelate to create a “strong” or a “weak” case. This is further moderated by the organisational culture in which such decisions take effect. Therefore, although some research finds forensic evidence enables prosecution (e.g., Campbell Bybee et al. 2008), this may not be related to the probative value of the forensic evidence in relation to the elements of the offence, and may instead reflect organisational imperatives. For example, in her interviews with Australian prosecutors, Lievore (2004) found that prosecutors tended to be conservative about discontinuance, erring on the side of proceeding with a case. As one prosecutor said, “you must have a clear, unarguable case not to proceed” (p. 40). It is unclear to what extent the absence or inconsistency of forensic medical evidence would be used to bolster such an argument for discontinuance.

Effect on guilty pleas

An initial perceived benefit of DNA evidence was its ability to identify an individual, resulting in an increase in guilty pleas, which would indeed be of great benefit to the criminal justice system and the complainant, in sparing the ordeal of a full criminal trial (financially, emotionally and time wise). However, its influence on the defendant’s plea is unclear. Research findings have been contradictory, with some evidence suggesting the presence of DNA evidence had no significant effect on increasing guilty pleas in Australia (Briody, 2002–03), and some suggesting “defendants often plead guilty once they learn that DNA evidence will be proffered” (Goodman-Delahunty & Tait, 2006, p. 97). Other studies have found that rather than resulting in an increase in guilty pleas, there has instead been a shift in defence tactics towards an even greater focus on the question of consent rather than one of perpetrator identity (Briody, 2002–03; Eastal & Eastal, 1990; Findlay & Grix, 2003; Gans, 2007).

Forensic evidence and juror decision-making

The “CSI Effect”

Forensic evidence (and the procedures for collecting this evidence) has more recently become a central feature of crime-solving television shows, epitomised by the popular US series *CSI – Crime Scene Investigation*. Within such shows, forensic evidence and criminal justice agencies are often portrayed as:

- highly reliable (Brewer & Ley, 2010);
- routinely used (Brewer & Ley, 2010);
- providing a single, objective and correct answer (Podlas, 2006);
- crucial to the investigation process (Brewer & Ley, 2010);

- investigators using it are authoritative (Brewer & Ley, 2010; Podlas, 2006);
- having unlimited resources (Robbers, 2008);
- having small caseloads (Robbers, 2008); and
- using unrealistic scientific tests that are conducted in unrealistic time frames (Robbers, 2008).

This raises questions as to whether individuals who watch crime shows develop inaccurate or unrealistic understandings of the uses and accuracy of forensic evidence, otherwise referred to as the CSI Effect (Tyler, 2006). The CSI Effect has been used to describe a variety of potential, at times contradictory, outcomes from viewing crime-based television shows (Kim, Barak, & Shelton, 2009). According to Podlas (2006) jurors will:

- have increased expectations that forensic evidence will be presented at trial;
- wrongly acquit if forensic evidence is not made available at trial;
- be unduly influenced by forensic evidence (and therefore more likely to convict even if the forensic evidence presented does not warrant a conviction);
- be uncritical of forensic evidence and afford it a greater weighting than other evidence types;
- be unable to understand the meaning of the forensic evidence itself; and
- be overly influenced by articulate court experts (also commonly referred to as “White Coat Syndrome”).

However, at the present time there has been limited research conducted examining whether the CSI Effect is in fact a reality. Of the completed studies, results are contradictory and at best inconclusive (Podlas, 2006; Stinson, Patry, & Smith, 2007; Tyler, 2006). For instance, a US study (Shelton, 2008) indicated that *CSI* viewers *did* have increased expectations of scientific evidence being presented at trial. However, these were not blanket expectations of scientific evidence. Rather, *CSI* viewers “had higher expectations [than non-viewers] about scientific evidence that was more likely to be relevant to a particular crime” (Shelton, 2008, p. 4). While *CSI* viewers held higher expectations that scientific evidence would be presented, importantly, this *did not* translate into “a demand for this type of evidence as a prerequisite for finding someone guilty” (Shelton, 2008, p. 5). So, while jurors may expect scientific evidence to be presented, it is not clear that this expectation unduly influences juror decision-making.

Furthermore, very few studies have considered the impact of the CSI Effect on jurors/mock jurors in relation to a sexual assault or rape trial. The aforementioned Shelton (2008) study provides an exception to this. Shelton’s study indicated that *CSI* viewers were less likely to convict without scientific evidence only in the case of rape trials. However, this is not necessarily a direct impact of viewing *CSI*. Participant demographics in this study indicated that *CSI* viewers were, generally speaking, less educated and “politically moderate”¹⁰ in relation to their non-*CSI* viewing peers, which could instead be the cause of this hesitance to convict. For instance, it is equally plausible that such individuals are more likely to believe rape myths and use these to guide their decision-making. Indeed, research conducted by the Australian Institute of Criminology demonstrated that members of the jury frequently draw on rape myths to guide their decision-making and determinations of victim credibility, and that holding unfavourable attitudes towards rape victims was associated with being male, lower levels of educational attainment, and being politically conservative (Taylor,

¹⁰ Shelton (2008) does not provide a definition of politically moderate, although we have interpreted it as referring to politically centrist.

2007, p. 4; see also Ellison & Munro, 2009; VicHealth, 2010). Most studies examining the CSI Effect have ignored other confounding variables—such as education level, political orientation, gender, and age—that may also influence juror decision-making (Brewer & Ley, 2010; Kim et al., 2009; Podlas, 2006) and ignore the potential for viewers to critically engage with, or draw multiple meanings from, these shows (Podlas, 2006). Indeed, Podlas suggested that the CSI Effect confounds so many ideas and variables as to make it an untestable and, ultimately, unprovable phenomenon.

While it has been argued that exposure to crime shows may reduce juror likelihood to convict as a result of unrealistic expectations around the use of forensic evidence in court, others have contested this notion. For instance, Tyler (2006) argued that crime shows are appealing not just because of their portrayal of forensic technology and the criminal investigation process, but because the criminal is universally apprehended, providing a sense of justice and restoring of the “moral order” in the mind of the viewer. Consequently “jurors are motivated to search for and find arguments that will legitimate their desires to convict” (Tyler, 2006, p. 1063) and, rather than being sceptical of forensic evidence (or its absence), may be more likely to overvalue the evidence presented in these shows to secure a conviction—particularly given that forensic evidence is depicted as the “ultimate crime-fighting tool” in these shows (Tyler, 2006, p. 1071; see also Podlas, 2006). Furthermore, an over-emphasis on juror interpretation of forensic evidence at trial may create a blind spot in relation to other factors influencing a decision to acquit or convict, such as “sympathy for defendants, changing views of the evidence quality, or increased mistrust of the government and law” (Tyler, 2006, p. 1076; see also Podlas, 2006) or, in the case of sexual assault, juror belief in rape myths (White & Du Mont, 2007).

As well as influencing juror understanding and expectations of forensic evidence, it has been suggested that the CSI Effect also affects those working within the criminal justice system (Smith, Patry, & Stinson, 2007; Robbers, 2008). That is, criminal justice workers, such as prosecutors, form a belief around the impact that they *think* crime shows have on juror expectations of evidence (despite a lack of any clear empirical evidence supporting this notion) and consequently alter their own practice around these (imagined) expectations (Smith et al., 2007; Kim et al., 2009). While it is unclear how widespread this influence on justice staff belief and practice is, it is possible that such beliefs around what the jury expect could significantly influence which cases proceed to trial based on availability of “convincing” forensic evidence and consequent (perceived) increased likelihood of successfully obtaining a conviction. In Robbers’ (2008, p. 91) study of criminal justice workers, some 79% of participants “cited specific instances in which they felt juries had made decisions influenced by forensic television programs”. More than two-thirds of participants indicated some change to their roles post-introduction of forensic television shows—notably in the amount of time spent discussing forensic evidence (Robbers, 2008). These results suggest that the practice of those working in the criminal justice system is indeed influenced by assumptions made around juror understanding and expectation of forensic evidence.

Are forensic findings “legal findings”?

Juries are directed to make sense of the evidence from a factual, but not necessarily scientific, point of view. As the expectations of, and for, forensic science grow, legal and forensic science scholars are debating the interface between the criminal law and forensic science (Edmond, 2011; Roux, 2011). The disciplines of law and science have different assessments of reliability, causation, certainty, and proof (Edmond, 2011). Although this issue is beyond

the scope of this paper, it is important to note that there is a much broader debate about these issues and how judges and juries are to make sense of them.

A recent US report argued two major questions should guide admission and use of forensic evidence in the court room: the extent to which a particular forensic discipline is based on a reliable scientific methodology; and the extent to which practitioners in a particular forensic discipline that relies on interpretation could be “tainted by error, the threat of bias, or the absence of sound operational procedures and robust performance standards”(National Academy of Sciences, 2009, p. 9). That is, is the expert witness qualified to testify about the particular forensic evidence under examination and is the evidence sufficiently reliable to merit a fact finder’s reliance on it in making judgements about legal culpability? On the other hand, there is disquiet among some forensic science scholars who see that “the determination of cause is the essence of judgment, not of science” (Margot, 2011, p. 89), and that the courtroom presents a particularly troubling domain in which scientific findings are interpreted as having a connection to, or being able to resolve, an aspect of the case in issue.

Summary

On the basis of the evidence, it appears that forensic medical evidence assists criminal justice actors to make assessments about the “strength” of sexual assault cases and to focus efforts accordingly. For police this occurs through:

- case building (e.g., increase in types of evidence collected; increase in investigational efforts; injury used as a proxy for non-consent; strategic suspect management); and
- confidence building (e.g., corroboration of victim’s statement; victim credibility due to having an examination; quality of forensic medical evidence report).

For prosecutors, forensic medical evidence appears to influence decision-making on three fronts:

- victim credibility (e.g., corroboration and fidelity of testimony jury will hear);
- strength of case (e.g., lends “scientific truth” to cases that may not otherwise have been authorised; offers “certainty” to the jury beyond victim testimony; injury acts as a proxy for non-consent); and
- strategy (e.g., corroboration and injury used to negotiate with defence pre-trial; target inconsistency in accused’s testimony if forensic medical evidence changes his admission).

Despite the expectation that forensic evidence is legally relevant to sexual assault prosecution, there is very little knowledge about:

- how it is received and heard by the court;
- how it is led as being relevant to the elements of the offence or to specific facts in issue;
- the basis upon which it is challenged by the defence;
- how forensic evidence is interpreted by juries; or
- judicial directions to the jury on forensic medical evidence and its probative weight.

As has been taken up by a number of commentators, this has implications for both legal and forensic practitioners and the extent to which they understand their respective roles in achieving justice outcomes for victims (Julian, Kelty, & Robertson, 2012; Ross, 2012).

Limitations in the research evidence

Although forensic evidence has become a central component of the criminal justice system, scholarly examination of *how* forensic medical evidence is used to inform and shape legal decision-making throughout that system by police, prosecutors, defence, juries, and judges is very limited. That is, we know very little about how forensic evidence contributes to decisions in case processing at various stages. For instance, do different types of forensic evidence (e.g., physical injury vs DNA or chemical trace analysis) or different assessments made by forensic specialists about the meaning of the evidence influence decisions to proceed with building a case, engaging the suspect, referring the case to prosecutors? How do organisational factors such as culture, leadership, risk management, or resources influence the uses to which forensic medical evidence is put in legal practitioners' decision-making? Julian and colleagues (2011) noted with reference to law enforcement that, "to a large extent, the policing and forensic services community has been "flying blind' in terms of the true impact of its work" (p. 220).

The lack of research about the use of forensic medical evidence in legal decision-making subsequently limits the utility of the available research about forensic medical evidence and legal outcomes. Outcomes are the result of decision-making processes, and these processes themselves are located in organisational and institutional contexts. The lack of research and its consequences for both the forensic science community and the criminal justice sector has been noted in Australia, the UK (Julian et al., 2011) and in the US (National Academy of Sciences, 2009).

Implications and questions arising from the research

The research evidence demonstrating or explaining an association between forensic medical evidence and sexual assault prosecution is not strong. This is due to methodological issues or actual gaps in the research (particularly in Australia). An important question suggested by the research is whether there are mismatched expectations about the role forensic medical evidence is assumed to have in legal outcomes, and the role that it does in fact have in securing positive legal outcomes for sexual assault complainants. This is not to say that forensic medical evidence is entirely insignificant, that it won't become more significant to sexual assault cases in the near future, or that it does not have important roles to play at different stages of the criminal justice system.

However, sexual assault remains one of the most difficult offences to successfully prosecute. Without ascertaining the actual role and impact of forensic medical evidence at different stages of prosecution, there is the danger that the availability of forensic medical evidence becomes a central criterion of proceeding with a matter when it is not clear that such evidence is a central criterion of securing a conviction. This may have implications for the types of cases that proceed. We discuss this in more detail below.

Without ascertaining the actual role and impact of forensic medical evidence at different stages of prosecution, there is the danger that the availability of forensic medical evidence becomes a central criterion of proceeding with a matter when it is not clear that such evidence is a central criterion of securing a conviction. This may have implications for the types of cases that proceed.

Sexual assault and the adversarial justice process: Putting forensic medical evidence in context

For legal purposes, establishing criminal liability (i.e., guilt) for sexual assault requires that four important elements were all present at the time of the offence. Where cases are contested, these elements must be proven beyond reasonable doubt. The physical and mental elements of sexual assault mean it is not enough for the prosecution to prove that non-consensual sex occurred; even if the jury is satisfied that the victim was not consenting they must also be satisfied—beyond reasonable doubt—that the defendant was aware of that non-consent (see Fileborn, 2011). Further to this, the defendant can argue that although he can see now that the victim was not consenting, at the time and in the circumstances he believed she was. Depending on jurisdiction, this belief does not need to be reasonable (just honestly held). These elements are described in Table 4.

Consent and forensic evidence

The majority of sexual assaults occur between known parties, and it is generally acknowledged by both parties that a sexual act occurred (Easteal & Easteal, 1990). Consequently, the issue of consent becomes the central focus and point of contestation during the trial—either through the construction of the complainant’s consent, or the defendant’s belief in her consent (Easteal & Easteal, 1990; Heenan & Murray, 2006; Lievore, 2004; Taylor, 2007). This presents a challenging context for forensic medical evidence in the courtroom.

Limitations exist as to the probative value forensic evidence in such cases. This is because of the elements of the offence that need to be proven. Forensic evidence may be of value in establishing some of the elements of a criminal case in some circumstances. For instance, forensic evidence may shed light on perpetrator identity (generally through DNA evidence), and connecting the perpetrator to the crime scene (i.e., victim/survivor’s body in the case of sexual assault). Forensic evidence may also provide evidence of non-consent (through physical injury indicating resistance) which can support the prosecution argument that a sexual act occurred *without* consent. However, as noted, the mental attitude and knowledge of the defendant (or *mens rea*) is also important, and the defendant must have the requisite mental state (usually defined in legislation—e.g., knowledge of non-consent or recklessness as to whether the victim was consenting) in order to be found guilty.

The presence of injury may provide some insight into the mental attitude of the defendant—for instance if significant force was used then this would tend to suggest the defendant must have been aware of the complainant’s non-consent. However, in cases hinging on the issue of consent, in the absence of serious physical injury, factors relating to the character of the complainant and defendant, and stereotypical scripts around sexual interaction, can be used to construct the defendant’s belief in the complainant’s consent (Heenan, 2002–03; Taylor, 2004; Young, 1998). While DNA evidence can function as an identifying tool, it is unable to provide evidence of consent; nor is its presence “conclusive of an individual’s guilt” (Findlay & Grix, 2003; see also Gans, 2005).

While DNA evidence can function as an identifying tool, it is unable to provide evidence of consent; nor is its presence “conclusive of an individual’s guilt” ... even evidence of resistance on behalf of the victim and force on the behalf of the defendant does not provide legal proof of non-consent.

Table 4: Elements of criminal offences

Element	Definition/description	What needs to be established in a sexual assault case
<i>Actus reus</i> or physical element	The prohibited (criminal) act	Engaging in the defined behaviour without consent; for example, penetration of the vagina with a body part or object without the consent of the victim Two components need to be established to demonstrate <i>actus reus</i> : <ul style="list-style-type: none"> ▪ Sexual activity occurred; and ▪ it occurred without consent. Presence/absence of consent, rather than the actual occurrence of sexual activity, is generally contested in trials.
<i>Mens rea</i> or mental element	The defendant's intention, recklessness or knowledge of the prohibited act	The defendant intended to do the physical act, and the defendant was aware that the victim was not consenting, or was reckless* towards whether or not the victim was consenting. It is not enough for the complainant to know in themselves that they do not consent—the defendant must have <i>knowledge</i> of this non-consent to be considered legally guilty.
Voluntariness	The defendant's actions cannot have been involuntary Involuntary actions may include: <ul style="list-style-type: none"> ▪ reflex actions; ▪ sleep walking; or ▪ being in a state of altered consciousness. 	Extreme self-induced intoxication is not considered evidence that a <i>defendant's</i> actions were involuntary. It is generally accepted that individuals so affected by alcohol would be unable to perform a sexual act.
Temporal coincidence	The <i>actus reus</i> and <i>mens rea</i> must occur at the same point in time for the defendant to be criminally liable for his actions.	The defendant had sexual intercourse with the complainant, without her consent, <i>at the same time</i> as knowing that, or being reckless towards whether, she was not consenting.

*Recklessness refers to a situation in which the defendant intentionally penetrates the complainant while being aware that she is not, or foreseeing that she might not be, consenting (Rush, 1997). That is, he does not necessarily intend to have non-consensual intercourse with the complainant, but is aware nonetheless (or should be, under the circumstances) that she might not be consenting to the sexual activity.

Source: Fileborn, 2011, p. 6.

Proving non-consent or consent can often rely on a “playing off” of the defendant and victim’s version of events, due to the typically private nature of sexual relations and consequent lack of witnesses (Gans, 2007; Orenstein, 2007; Taylor, 2007). DNA evidence is unable to provide any insight into the truthfulness or otherwise of these accounts. Indeed, forensic biology laboratories in some states and territories, such as Queensland, do not perform DNA tests on samples where the accused has admitted to sexual activity occurring—such tests are of “no probative value” under this circumstance (Briody, 2002–03)—clearly demonstrating the limited use or need for DNA evidence in cases hinging on the issue of consent.

Other forms of forensic evidence, such as documentation of physical injury, may be more powerful in demonstrating non-consent, and have been associated with positive legal outcomes (Briody, 2002–03; Du Mont & White, 2007; Du Mont et al., 2009). Yet, even evidence of resistance on behalf of the victim and force on the behalf of the defendant does

not provide legal proof of non-consent. The research evidence suggests that overall, few victims sustain ano-genital injury following sexual assault (McLean, Roberts, White, & Paul, 2011) and that where injury is present, the research is not clear that the difference between injury sustained during consensual intercourse and that sustained during non-consensual intercourse is substantial or corroborative (Anderson, Parker, & Bourguignon, 2008; Astrup, Ravn, Lauritsen, & Thomsen, 2012; Sommers, 2007).

Finally, many sexual assault victims do not sustain any additional physical injury in the course of the assault (Du Mont & White, 2007; Lievore, 2003; Taylor, 2007), meaning that such evidence is simply unavailable and irrelevant to constructing a case in these circumstances. Again, a reliance on, or imperative for, forensic medical evidence places cases where evidence of additional physical injury is not available at a distinct disadvantage. It is important to critically ask whether forensic medical evidence risks becoming a proxy for previous traditions, namely the unreliability of victim testimony and the framing of rape as a physical overpowering or against the will, compared to being about non-consent. This is discussed below.

The risk of reinforcing misconceptions about sexual assault

Historically, victim/survivors have been regarded as an unreliable class of witness.¹¹ It is only in the last 20 years that warnings about the quality of victim's testimony are no longer mandatory. Similarly, the legal definition of rape has only recently shifted from being "against the will" of the victim, to being about the lack of freely given consent, in which it is not required to prove physical resistance. Current research suggests that forensic evidence can in some circumstances compound the influence of rape myths in the criminal justice system. The notion that:

rape is identified most strongly though DNA evidence does a disservice to the definition scope of sexual assault, and promotes the misunderstanding that without DNA other indicators of assault become problematic. Reforms in the law regarding sexual assault have recently attempted to emphasise the assault component in these offences as well as endeavouring to move away from a narrow conception of rape. Semen sampling as core of sexual assault proofs turn the clock back on this. (Findlay & Grix, 2003, pp. 280–281)

Expansions of the legal definition of rape and sexual assault across Australia has meant that a variety of acts not involving penile–vagina penetration now constitute sexual assault or rape (Fileborn, 2011). Clearly, sperm samples are unlikely to be obtained where the defendant has used an object or other body part to commit the offence—although DNA may still be obtained from skin or other cell types and physical injuries can be documented (Briody, 2002–03). Gans (2005) highlighted the potential of DNA evidence to perpetuate and support rape myths, particularly relating to assumptions around victim credibility and promiscuity. For instance, if samples of sperm collected from a victim's body are revealed to belong to more than one individual, indicating that the victim had intercourse with other men, this may allow the defence counsel to insinuate that the victim was sexually promiscuous, therefore justifying the defendant's belief in her consent, or to cast the

¹¹ In *The History of the Pleas of the Crown*, Lord Hale observed of rape that it is "an accusation easily to be made and hard to be proved and harder to be defended by the party accused, tho' never so innocent" (Hale, 1800, p. 634). Moreover, genuine complainants would raise a "hue and cry" immediately following a sexual assault. Though made with reference to a handful of matters, as an influential and highly respected jurist, mandatory corroboration warnings and warnings of delayed complaint continued in common law countries (including Australia) until at least the 1990s.

complainant as of “poor” character, reducing her credibility as a witness and victim (Gans, 2005) (as well as potentially casting doubt as to who the actual perpetrator was).

Furthermore, DNA and other forensic evidence can be (mis)interpreted to insinuate that an offence did not take place. As Du Mont and Parnis (2003) suggested, a negative DNA match or the absence of DNA evidence may be interpreted by the defence to imply that “nothing” happened (see also Du Mont & White, 2007). Likewise, various authors have argued that a finding indicating that no physical injury (e.g., tearing of tissue in the genital region, bruises, cuts etc.) was received by the complainant may be construed to demonstrate that no offence took place, when rather these findings indicate simply that there were no injuries in addition to the assault itself (Du Mont & White, 2007; Kellogg, Menard, & Santos, 2004; White & McLean, 2006).

The use of forensic evidence in this manner plays into a host of rape myths, such as that real rape is violent and the victim/survivor will be physically injured in the course of that attack—though in reality only 23% of victim/survivors, according to one estimate, received additional physical injury (Lievore, 2004). The continued influence of this myth in the courtroom is demonstrated in Du Mont and White’s (2007) finding that evidence pertaining to severe physical injury was the only evidence type associated with increased conviction. A reliance on forensic evidence to prove that an offence took place subsequently privileges certain models of (what is in fact atypical) sexual offending, such as that involving violent force (Findlay & Grix, 2003). However, forensic evidence is not always “produced” by the perpetrator (Easteal and Easteal, 1990). The perpetrator may not ejaculate, may have used a condom, or may have had a vasectomy meaning that no sperm is contained in their semen (sperm are the source of DNA in a semen sample) (Du Mont & White, 2007; Easteal & Easteal, 1990; Ledray, 2001).

It must be questioned whether victim/survivors who do not have DNA or other forensic evidence to support their claims are consequently at a disadvantage in accessing the legal system and obtaining a just legal outcome? Is expectation or reliance on forensic evidence in successfully prosecuting rape/sexual assault cases ultimately to the detriment of the majority of sexual offence cases where such evidence is either not available or unable to tell the jury anything relating to the key points of contention, such as consent? A great injustice would be incurred if the majority of sexual assault cases—those that already struggle to proceed through the criminal justice system at various stages (i.e., non-stereotypical acquaintance type rapes)—were further hindered purely due to a lack of forensic evidence.

Further, a dependence upon forensic evidence insinuates that the woman who is unable to produce forensic samples (as her body is the source of this evidence) is somehow less credible as a witness and complainant. That is, she requires evidence to corroborate her experience. Therefore, despite legal reforms counteracting this notion that the word of a woman alone cannot be trusted (Du Mont & Parnis, 2003), it would seem the notion that women are untrustworthy in the eyes of the criminal justice system endures (Du Mont & White 2007).¹² Rather than definitively proving the occurrence of a “social wrong”, an over-emphasis on forensic evidence lends credibility to a particular version of events via the

¹² The language here is deliberately gendered as it was women who were subjected to the legal thinking behind mandatory corroboration warnings and were not legally recognised as victims of sexual assault at the time of Hale’s judgement. Therefore these warnings were themselves gendered. Men are now recognised as the victims of sexual assault as well. However it is not clear what implications these historical issues have for adult male victim/survivors—and whether these historical issues continue to impact *all* victim/survivors, or just women and children victim/survivors.

“authority of science”, creating the appearance of truth where the victim’s account would otherwise be dismissed as “not credible”.

Conclusion

Contrary to its representation within *CSI*-type shows, forensic evidence does not offer certainty or truth about a criminal incident, nor can it offer—according to forensic scientists—a causal analysis. As one forensic science specialist recently observed:

Contrarily to all other sciences, forensic science is looking at the least likely, fragmented, imperfect, uncontrolled element in an event: the trace, which, by definition, is a pattern, a signal or material transferred during an event ... It is the remnant (the memory) of the source (who – with what?) and of the activity (what, how, when, why?) that produced it. (Margot, 2011, p. 91)

This is a very ephemeral characterisation of forensic evidence. Yet its “epistemic weight” in criminal justice decision-making (that is, its authority, objectivity and utility for decision-making) has sometimes been perceived as far more certain, leading Justice Kirby to wonder whether biological and biometric evidence, such as DNA, has become infallible (Kirby, 2010).

The empirical research and the debates about the interface between forensic science and the criminal law presents an ambivalent picture about what the role of forensic evidence in criminal prosecutions is—and what it should be. It is important to have a clear sense of this role, because the collection and analysis of forensic evidence is resource intensive. In addition, forensic examinations in the immediate aftermath of sexual assault can be difficult for the victim/survivor. Future debate, policy development and research will need to consider how to balance the imperative to collect forensic evidence from the body of the victim at the first contact stage (e.g., DNA, vaginal swabs, documentation of ano-genital injury—including photo-documentation) against the mixed findings as to its centrality in the successful prosecution of sexual assault.

In short, limitations exist as to what, and how much, forensic evidence can actually reveal about a sexual assault. The evidence to date suggests a mismatch between expectations that forensic medical evidence will have an impact on legal outcomes compared to the reality of legally proving sexual assault. This is particularly so within a trial context where it is consent that is most often at issue, rather than the identity of the suspect or whether sexual activity had occurred. There is insufficient Australian research to make firm assumptions about its role and impact. However, it is important to acknowledge that the structure of the criminal law restricts the probative weight forensic medical evidence can play, where other factors such as victim credibility can have a significant influence on legal practitioners’ strategies and jury decision-making.

That is *not* to say that forensic evidence is of no use in sexual assault trials—it can clearly play an important if not crucial role at times. At the same time, the perceived benefits and uses of forensic evidence should not be overstated or, indeed, misrepresented. As Haesler (2006) noted, with evidence such as DNA, its apparent “certainty can be deceptive. It can be misused and misapplied. It ... is part of a prosecution case, it is not a panacea” (p. 121).

References

- Australian Bureau of Statistics. (2006). *Personal Safety Survey, Australia, 2005* (Cat. No. 4906.0). Canberra: ABS.
- Anderson, S., Parker, B., & Bourguignon, C. (2008). Changes in genital injury patterns over time in women after consensual intercourse. *Journal of Forensic Legal Medicine*, 15(5), 306–311.
- Astrup, B. S., Ravn, P., Lauritsen, J., & Thomsen, J. L. (2012). Nature, frequency and duration of genital lesions after consensual sexual intercourse—Implications for legal proceedings. *Forensic Science International*, 219(1), 50–56.
- Bornstein, B. (2004). The impact of different types of expert scientific testimony on mock jurors' liability verdicts. *Psychology, Crime & Law*, 10(4), 429–446.
- Boyd, C. (2008). Forensic medical care for sexual assault victim/survivors in Australia: An interview with Karen Willis, Maureen Phillips, and Angela Willams. *ACSSA Aware*, 17, 12–17.
- Brewer, P., & Ley, B. (2010). Media use and public perceptions of DNA evidence. *Science Communication*, 32(1), 93–117. doi:10.1177/107554700934034.
- Briody, M. (2002–03). The effects of DNA evidence on sexual offence cases in court. *Current Issues in Criminal Justice*, 14(2), 159–181.
- Campbell, R. (2006). Rape survivor's experiences with the legal and medical systems: Do rape victim advocates make a difference? *Violence Against Women*, 12(1), 30–45.
- Campbell, R., Bybee, D., Ford, J. K., & Patterson, D. (2008). *Systems change analysis of SANE programs: Identifying the mediating mechanisms of criminal justice system impact. Project Summary*. Washington DC: US Department of Justice.
- Campbell, R., Patterson, D., Adams, A. E., Diegel, R., & Coats, S. (2008). A participatory evaluation project to measure SANE nursing practice and adult sexual assault patients' psychological well-being. *Journal of Forensic Nursing*, 4(1), 19–28. doi: 10.1111/j.1939-3938.2008.00003.x
- Campbell, R., Patterson, D., Bybee, D., & Dworkin, E. R. (2009). Predicting sexual assault prosecution outcomes. *Criminal Justice and Behavior*, 36(7), 712–727. doi: 10.1177/0093854809335054
- Cowdery, N. (2002, December). *Forensic science in criminal law*. Paper presented at the Department of Prosecutions Solicitors' Conference, Sydney.
- Daly, K., & Bouhours, B. (2010). Rape and attrition in the legal process: A comparative analysis of five countries. *Crime and Justice*, 39(1), 565–650.
- Du Mont, J., & Parnis, D. (2003). Forensic nursing in the context of sexual assault: Comparing the opinions and practices of nurse examiners and nurses. *Applied Nursing Research*, 16, 173–183.
- Du Mont, J., & White, D. (2007). The uses and impacts of medico-legal evidence in sexual assault cases: A global review. Geneva, Switzerland: World Health Organization.
- Du Mont, J., White, D., & McGregor, M. J. (2009). Investigating the medical forensic examination from the perspectives of sexually assaulted women. *Social Science & Medicine*, 68(4), 774–780.
- Easteal, P., & Easteal, S. (1990). *The forensic use of DNA profiling* (Trends & Issues in Criminal Justice, No. 26). Canberra: Australian Institute of Criminology.
- Edmond, G. (2011). Actual innocents? Legal limitations and their implications for forensic science and medicine [Special issue]. *Australian Journal of Forensic Sciences*, 43(2–3), 177–212. doi: 10.1080/00450618.2011.555419
- Edwards, H., & Gotsonis, C. (2009). *Strengthening forensic science in the United States: A path forward*. Washington, DC: National Academies Press.
- Ellison, L., & Munro, V. E. (2009). Reacting to rape: Exploring mock jurors' assessments of complainant credibility. *British Journal of Criminology*, 49(2), 202–219.
- Fehler-Cabral, G., Campbell, R., & Patterson, D. (2011). Adult sexual assault survivors' experiences with Sexual Assault Nurse Examiners (SANEs). *Journal of Interpersonal Violence*, 26(18), 3618–3639. doi: 10.1177/0886260511403761
- Fileborn, B. (2011). *Sexual assault laws in Australia* (ACSSA Resource Sheet). Retrieved from <www.aifs.gov.au/acssa/pubs/sheets/rs1/index.html>.
- Findlay, M., & Grix, J. (2003). Challenging forensic evidence? Observations on the use of DNA in certain criminal trials. *Current Issues in Criminal Justice*, 14(3), 269–282.
- Gans, J. (2005). DNA identification and rape victims. *UNSW Law Journal*, 28, 272–285.
- Gans, J. (2007). Much Repented: Consent to DNA sampling. *UNSW Law Journal*, 30, 579–608.
- Goodman-Delahunty, J., & Hewson, L. (2010). *Enhancing fairness in DNA jury trials* (Trends and Issues in Crime and Criminal Justice No. 392). Canberra: Australian Institute of Criminology.

- Goodman-Delahunty, J., & Tait, D. (2006). DNA and the changing face of justice. *Australian Journal of Forensic Sciences*, 38, 97–106.
- Hale, M. (1800). *The History of the Pleas of the Crown. Volume 2* (Chapter 58). Retrieved from <books.google.com.au/books?id=sUIDAAAACAAJ&pg=PR4&source=gbs_selected_pages&cad=3#v=onepage&q&f=false>
- Haesler, A. (2006). Dealing with DNA in court: Its use and misuse. *Judicial Review*, 8(1), 121–144.
- Hagemann, C. T., Stene, L. E., Myhre, A. K., Ormstad, K., & Schei, B. (2011). Impact of medico-legal findings on charge filing in cases of rape in adult women. *Acta Obstetrica et Gynecologica Scandinavica*, 90(11), 1218–1224. doi: 10.1111/j.1600-0412.2011.01246.x
- Heenan, M. (2002–03). Reconstituting the “relevance” of women’s sexual histories in rape trials. *Women Against Violence*, 13, 4–17.
- Heenan, M., & Murray, S. (2006). *Study of reported rapes in Victoria 2000–2003: Summary research report*. Melbourne, Vic: *Statewide Steering Committee to Reduce Sexual Assault*.
- Ingemann-Hansen, O., Brink, O., Sabroe, S., Sorensen, V., & Charles, A. V. (2008). Legal aspects of sexual violence – Does forensic evidence make a difference? *Forensic Science International*, 180(2), 98–104. doi: 10.1016/j.forsciint.2008.07.009
- Jewkes, R., Christofides, N., Vetten, L., Jina, R., Sigsworth, R., & Loots, L. (2009). Medico-legal findings, legal case progression, and outcomes in South African rape cases: Retrospective review. *PLoS Med*, 6(10), e1000164. doi: 10.1371/journal.pmed.1000164
- Johnson, D., Peterson, J., Sommers, I., & Baskin, D. (2012). Use of Forensic science in investigating crimes of sexual violence. *Violence Against Women*, 18(2), 193–222. doi: 10.1177/1077801212440157
- Jordan, J. (2004). *The word of a woman: Police, rape, and belief*. Hampshire: Palgrave Macmillan.
- Julian, R., Kelty, S., & Robertson, J. (2012). Get it right the first time: Critical issues at the crime scene. *Current Issues in Criminal Justice*, 24(1), 25–38.
- Julian, R., Kelty, S., Roux, C., Woodman, P., Robertson, J., Davey, A. et al. (2011). What is the value of forensic science? An overview of the effectiveness of forensic science in the Australian criminal justice system project. *Australian Journal of Forensic Sciences*, 43(4), 217–229. doi: 10.1080/00450618.2011.610820
- Kellogg N., Menard S., & Santos A. (2004). Genital anatomy in pregnant adolescents: “Normal” does not mean “nothing happened”. *Pediatrics*, 113(1), 67–69.
- Kim, Y., Barak, G., & Shelton, D. (2009). Examining the “CSI-effect” in the cases of circumstantial evidence and eyewitness testimony: Multivariate and path analyses. *Journal of Criminal Justice*, 37(5), 452–460.
- Kirby, M. (2010). Forensic evidence: Instrument of truth or potential for miscarriage? *Journal of Law, Information and Science*, 20(1), 1–22.
- Ledray, L. (2001). *Evidence collection and care of the sexual assault survivor: The SANE-SART report*. Retrieved from <www.nsvrc.org/publications/guides/evidence-collection-and-care-sexual-assault-survivor-sane-sart-response>.
- Lievore, D. (2004). *Prosecutorial decisions in adult sexual assault cases: An Australian study*. Canberra, ACT: Australian Institute of Criminology.
- Lovett, J., Regan, L., & Kelly, L. (2004). *Sexual Assault Referral Centres: Developing good practice and maximising potentials*. London: Home Office.
- Maier, S. L. (2008). “I have heard horrible stories ...”: Rape victim advocates’ perceptions of the revictimization of rape victims by the police and medical system. *Violence Against Women*, 14(7), 786–808.
- Margot, P. (2011). Forensic science on trial – what is the law of the land? [Special issue]. *Australian Journal of Forensic Sciences*, 43(2–3), 89–103.
- McLean, R., & Goodman-Delahunty, J. (2008). The influence of relationship and physical evidence on police decision-making in sexual assault cases. *Australian Journal of Forensic Sciences*, 40(2), 109–121.
- McLean, I., Roberts, S. A., White, C., & Paul, S. (2011). Female genital injuries resulting from consensual and non-consensual vaginal intercourse. *Forensic Science International*, 204(1), 27–33.
- Millar, G., Stermac, L., & Addison, M. (2002). Immediate and delayed treatment seeking among adult sexual assault victims. *Women and Health*, 35(1), 53–64.
- Morrison, Z. (2008). What is the outcome of reporting rape to the police? Study of reported rapes in Victoria 2000–2003: Summary research report. *ACSSA Aware*, 17, 4–11.
- National Academy of Sciences. (2009). *Strengthening forensic science in the United States: A path forward*. Washington, DC: National Academy of Sciences, Retrieved from <www.ncjrs.gov/pdffiles1/nij/grants/228091.pdf>.

- National Crime Victim Law Institute. (no date). *Sexual assault statutes in the United States*. Retrieved from <relieffundforsexualassaultvictims.org/resources/sexualassaultchart_NCVLI-D.doc/>
- Orenstein, A. (2007). Special issues raised by rape trials. *Fordham Law Review*, 76, 1585–1608.
- Peterson, J., Sommers, I., Baskin, D., & Johnson, D. (2010). *Role and impact of forensic evidence in the criminal justice process*. Washington, DC: US Department of Justice, Office of Justice Programs, National Institute of Justice.
- Podlas, K. (2006). The CSI Effect: Exposing the media myth. *Fordham Intellectual Property, Media & Entertainment Law Journal*, 16, 431–465.
- Robbers, M. (2008). Blinded by science: The social construction of reality in forensic television shows and its effect on criminal jury trials. *Criminal Justice Policy Review*, 19(1), 84–102.
- Robinson, A. L., Hudson, K., & Brookman, F. (2009). *A process evaluation of Ynys Saff, the sexual assault referral centre in Cardiff: Final evaluation report*. Retrieved from <www.cardiff.ac.uk/socsi/research/researchprojects/robhudsarc.html>.
- Ross, A. (2012). Forensic science in Australia: Where does Australia sit in relation to trends and issues in the international context? *Current Issues in Criminal Justice*, 24(1), 121.
- Roux, C. (2011). Forensic science – A teenager in identity crisis? [Special issue]. *Australian Journal of Forensic Sciences*, 43(2–3), 79–83. doi: 10.1080/00450618.2011.571221
- Roux, C., Crispino, F., & Ribaux, O. (2012). From forensics to forensic science. *Current Issues in Criminal Justice*, 24(1), 7–24.
- Shelton, D. (2008). *The “CSI Effect”: Does it really exist?* (National Institute of Justice No. 259). Retrieved from <www.nij.gov/journals/259/csi-effect.htm>.
- Smith, S., Patry, M., & Stinson, V. (2007). But what is the CSI Effect? How crime dramas influence people's beliefs about forensic evidence. *The Canadian Journal of Police & Security Services*, 5(3), 187–195.
- Sommers, M. (2007). Defining patterns of genital injury from sexual assault: A review. *Trauma, Violence and Abuse*, 8(3), 270–280.
- Stinson, V., Patry, M., & Smith, S. (2007). The CSI Effect: Reflections from police and forensic investigators. *The Canadian Journal of Police & Security Services*, 5(3/4), 125–133.
- Success Works. (2011). *Sexual assault reform strategy: Final evaluation report*. Melbourne, Victoria: Department of Justice.
- Taylor, C. (2004). *Surviving the legal system: A handbook for adult and child sexual assault survivors and their supporters*. Melbourne: Coulomb Communications.
- Taylor, N. (2007). *Juror attitudes and biases in sexual assault cases*. Canberra: Australian Institute of Criminology.
- Tyler, T. (2006). Viewing CSI and the threshold of guilt: Managing truth and justice in reality and fiction. *The Yale Law Journal*, 115, 1050–1085.
- Ullman, S., & Fillipas, H. (2001). Correlates of formal and informal support seeking in sexual assault victims. *Journal of Interpersonal Violence*, 16(10), 1028–1047.
- US Department of Justice. (2004). *A national protocol for sexual assault medical forensic examinations President's DNA Initiative*. Washington, D.C.: US Department of Justice.
- VicHealth. (2010). *National Community Attitudes Towards Violence against Women Survey 2009: Summary of findings*. Carlton, Vic.: Victorian Health Promotion Foundation.
- Victorian Law Reform Commission. (2004). *Sexual offences: Final report*. Melbourne: Victorian Law Reform Commission.
- White, C., & McLean, I. (2006). Adolescent complainants of sexual assault; injury patterns in virgin and non-virgin groups. *Journal of Clinical Forensic Medicine*, 13, 172–180.
- Williams, A. (2004). Managing adult sexual assault. *Australian Family Physician*, 33(10), 825–828.
- World Health Organization. (2003). *Guidelines for medico-legal care for victims of sexual violence*. Geneva: WHO.
- Young, A. (1998). The waste land of the law, the wordless song of the rape victim. *Melbourne University Law Review*, 22, 442.