

Evidence Check

Forensic medical photography and sexual abuse in children

An **Evidence Check** rapid review brokered by the Sax Institute for NSW Kids and Families.
March 2015.

This report was prepared by:

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Health

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1 Executive summary

Introduction

The aim of this rapid review is to examine the research literature on photo-documentation of medical examinations where child sexual abuse is suspected and to document the extent to which such photo-documentation is of medical and forensic utility, taking into account the impact of its use on the wellbeing of a child or young person, the reliability of the clinical findings and the legal outcomes

Method

A systematic analysis was conducted of the medical literature and associated disciplines from 2004 onwards using appropriate keywords and search terms. The literature and case law related to the use of photo-documentation in legal contexts was also examined, without the same limitation as to date.

Results

Photo-documentation of clinical findings is of significant utility in medical practice, as it improves the likelihood of detecting ano-genital injury, improves the accuracy of diagnosis, and allows other experts to comment on the evidence without being present at the time of examination. Video-colposcopy is the preferred mode of documentation because it assists in a more reliable diagnosis than still photographs.

There is no evidence from the literature of negative outcomes from colposcopic examinations which ought to lead to restrictions on the conduct of such examinations. Nor are there documented problems with the retention of photo-documentation in suspected child sexual abuse cases. However, care must be taken to provide appropriate information to the patient and to gain consent. Some patients may be uncomfortable with the collection of photographic evidence.

Photo-documentation of apparently abnormal findings is of forensic value although misdiagnoses using photo-documentation have been identified by the courts as a significant problem. On the other hand, second opinions of photo-documentation may be important in preventing miscarriages of justice. There is no forensic value in retaining photo-documentation of normal findings for extended periods of time.

Discussion and implications

The great majority of children who undergo a medical examination for suspected child sexual abuse have normal findings. Evidence of ano-genital injury is, therefore, the exception, not the rule. Colposcopy aids in the detection of abnormal findings and the photo-documentation of such findings is of forensic utility. However, the controversies about the collection of such documentation are acknowledged, and legislation may be needed to ensure that there is not unnecessary retention of photo-documentation of normal findings, and that access to photo-documentation of abnormal findings is appropriately restricted.

1 Introduction

The purpose of this review is to assist NSW Kids and Families to develop guidance for medical and psychosocial practitioners on:

- the types of child sexual abuse cases in which photography, video recording and/or live transmission should be used;
- the impact of the modality of photo/video documentation/transmission on the usefulness and impact of forensic evidence, and
- best practice and requirements in relation to processes.

Photographic documentation of the ano-genital region is an established aspect of practice in the medical assessment of children where there is a suspicion of child sexual abuse with guidelines for its use in a number of jurisdictions. Photo-documentation is seen as having both clinical and forensic benefits. It can eliminate the need for repeat examinations because the photographs can be shown to specialists for a second opinion; it is regarded as an excellent teaching tool, and can be useful in court proceedings, not least in aiding the examiner's recollection of what she or he observed at the time of a child's medical examination (Adams, 1997).

Although this review considers photography and video recording generally, the context for this review is that in practice, such photo-documentation will be collected by means of a colposcope. This provides a non-intrusive means of magnification and photographic documentation, often providing evidence of the examination findings of the genital and perianal area. This equipment has been available since about 1980, and colposcopy has now become a well-established part of clinical practice in assessing children suspected of having been sexually abused.

Adams (1997, p.341) explains the process and the advantages of the colposcope over the use of a 35mm camera:

The colposcope, with a 35-mm camera and/or a video camera attachment, has several advantages over the camera with a macrolens for documentation. First, the colposcope is a medical instrument. It looks like a medical instrument; it does not look like a camera. When the examiner sits behind the instrument, either at the foot of the examination table or a few feet away from the child on the mother's lap, there is a barrier between the examiner and the child. When the examiner uses a camera, there is no perceived barrier and the child sees and knows that she or he is having her or his "private parts" photographed. If that child was photographed or videotaped by the alleged abuser, the child may need to be reassured that the clinical examination and photography is a very different situation. This is an easier argument to make when the camera is attached to a colposcope, rather than being handheld.

Another advantage of photocolposcopy is that many systems enable the examiner to take photographs at several different magnifications, from 4x to 25x. A macrolens on a 35-mm camera does not have this capacity. It is helpful to be able to photograph the entire perineum on low power and very small hymenal contusions on the highest power, for example. In addition, most colposcopes

can be dually equipped with both a video camera, for teaching other trainees (or the patient), and a 35-mm camera to take prints or slides for medico-legal documentation.

Notwithstanding the widespread use of colposcopy and its acceptance in clinical practice, concerns have been expressed about potential negative aspects arising from the use of photo-documentation. These concerns are the focus of this literature review. How does the child experience the photographing or videotaping of his or her ano-genital area? Are there particular issues when children have been photographed for pornographic purposes by the alleged perpetrator? What is the impact on the victim of those photographs being made available to the accused for the purposes of his/her defence? What about the impact of those photographs if shown to the jury? These concerns are reflected in certain questions we have been asked to address, although we have not addressed the impact on adult victims of sexual assault (see Spangaro et al, 2014).

In seeking answers to the questions, it is important to identify the difficulties in disentangling different strands of the child's experience, first in the context of a medical examination for suspected child sexual assault, and secondly, in relation to any criminal prosecution.

The medical and forensic examination

For the most part, such examinations are likely to yield forensic evidence only if the examination occurs within 72 hours of the alleged assault since there is a narrow window of time in which physical evidence may be recovered from the body of a pre-pubertal child (Young et al, 2006). The timing for collection depends also on the type of assault (NSW Police Guidelines for Collection of Forensic Specimens from Complainants or Suspects 2012 Toxicology can be done on urine and blood within 72 hours and on hair up to 6 months. In one study, over 90% of children with positive findings were seen within 24 hours of the assault (Christian et al, 2000). It is very unlikely that any forensic evidence will be recovered after 96 hours from the body of a pre-pubertal child (Jenny et al, 2013). For these reasons, such an examination is likely to be conducted only if the child or young person presents for assessment within the timeframe dictated by the type of assault or if there are symptoms of sexual abuse.

It is not surprising that many children and adolescents seen in a medical setting as a result of suspected child sexual abuse may feel anxious or stressed. Sources of distress include the experience of abuse itself, the reaction of a parent or caregiver of the disclosure, the involvement of police and social workers, and apprehensions about the medical examination.

The criminal prosecution

If the matter progresses to trial, then the child may experience considerable stress from the prosecution process, including waiting time, giving evidence and being cross-examined. Any negative impact arising from the use of photo-documentary evidence may be difficult to disentangle from these other stressors.

Beyond the issue of whether there are negative effects from the clinical practice of colposcopy and the use of photo-documentation, there are also questions about what is best practice both in terms of clinical and forensic benefits.

The focus of this review is on literature published from 2004 onwards, as stipulated in the terms of project brief.

2 Aims

The two broad review questions are:

- Should medical and forensic photo/video documentation and/or live transmission be used in suspected child sexual abuse cases?
- How should forensic photographic documentation be used and/or collected?

The term photo-documentation will be used in this report generically to include documentation by photographs, video and transmission by live streaming. These issues will be explored in relation to the impact of photo-documentation on the well-being of the child, the reliability and accuracy of the clinical findings, and the legal outcomes.

3 Methods

What is a rapid review?

A rapid review is a short synthesis of the available research evidence related to a specific question, with a view to providing evidence-based recommendations to facilitate policy development.

Search strategy

a) Medical and psychology literature

Medline, PsycINFO, Embase and the Cochrane Library were searched using a combination of the following key words and MeSH terms: Forensic Pathology/, Forensic Medicine/, Photography/, Video Recording/, Documentation/, photo* documentation.mp., video documentation.mp., Colposcopy/, Child Abuse, Sexual/diagnosis*, Child Abuse, Sexual/legislation & jurisprudence*, Sex Offences/, sexual abuse.mp. and Sexual assault/. This search was limited to ages 0 to 18 years using the Advanced Limits function.

b) Legal literature

The legal literature was searched using Westlaw, Lexis and Index to Legal Periodicals using search terms: photo-documentation, forensic medical examination, child sexual assault, photo, colposcopy*. Child* and adolescence* was also used to narrow down searches.

A search of the Australian case law on Austlii was conducted using the terms photo-documentation, colposcopy, colposcope and forensic medical exam*.

Due to the paucity of relevant material, a much wider selection of material was examined than required by the project brief, in order to identify all literature that might have a bearing on the issues with which this project is concerned. Searches were limited to English language papers. Relevant peer-reviewed papers' reference lists were checked for other relevant literature.

In addition to searches of the academic and grey literature, an analysis of pertinent cases from Australia and other common law countries was also conducted.

Inclusion and exclusion criteria

For the review of the medical literature and associated disciplines, the following inclusion and exclusion criteria were utilised.

Papers were included if:

- the literature examined the impact of medical and forensic photo/video documentation and/or transmission in suspected cases of child sexual abuse in terms of health and well-being of children (including parental/guardian stress) and/or literature examined the quality of the

clinical findings when photo-documentation is used as part of medical and forensic examinations, compared to cases where photo-documentation is not used.

- papers referred to the impact on one of the following areas: the well-being of the child, the reliability and accuracy of the clinical findings and the legal outcomes.
- participants were children aged <18 years old suspected of having been sexually abused.

Papers relating to the medical literature were excluded if they related to:

- Forms of child abuse not involving sexual contact
- Literature on child sexual abuse issues which contained no reference to photodocumentation
- Countries other than Australia, New Zealand, USA, UK and Canada
- Anything published prior to 2004
- Editorials and conference proceedings

Grey literature was searched via Google to supplement the evidence available from academic papers. These included unpublished government and non-government organisations reports, legal reports from expert groups or professional societies such as the Helfer Society.

Data extraction

Retrieved titles and abstracts were assessed against the eligibility criteria by one author and rejected if the paper did not meet inclusion criteria based on the title and abstract. A second author then checked the included list of references to ensure they met the inclusion criteria.

Legal literature

For the legal literature, any material was included that related to the use of photo-documentation forensically, as well literature on evidence of anal or genital injury in the prosecution of sexual assault.

Assessment of quality of evidence

Assessing the quality of evidence can be measured in many different ways, for example, by drawing on the NHRMC levels of evidence or the GRADE system. The authors of this report consider that these assessments are not helpful for the types of research literature included in this rapid review. Many studies are cross-sectional in nature. Furthermore our analysis has had to draw upon commentaries, unpublished surveys, legal cases and healthcare practice guidelines. Few interventions were found which met the inclusion criteria. For consistency, we have simply commented on the limitations in quality of evidence for each empirical study rather than making a graded assessment.

Data synthesis

The characteristics of each empirical study, including setting, country, participants, gender, age, type of academic paper, intervention (if any), follow-up period (if any) and study outcome measures, were extracted. Academic papers were sorted according to the review sub-question they applied to, although some papers were relevant to more than one question. Legal cases and medical guidelines were documented in separate appropriate tables. All academic papers are referenced at the end of the report.

4 Results

Results of the systematic review of the medical literature and associated disciplines

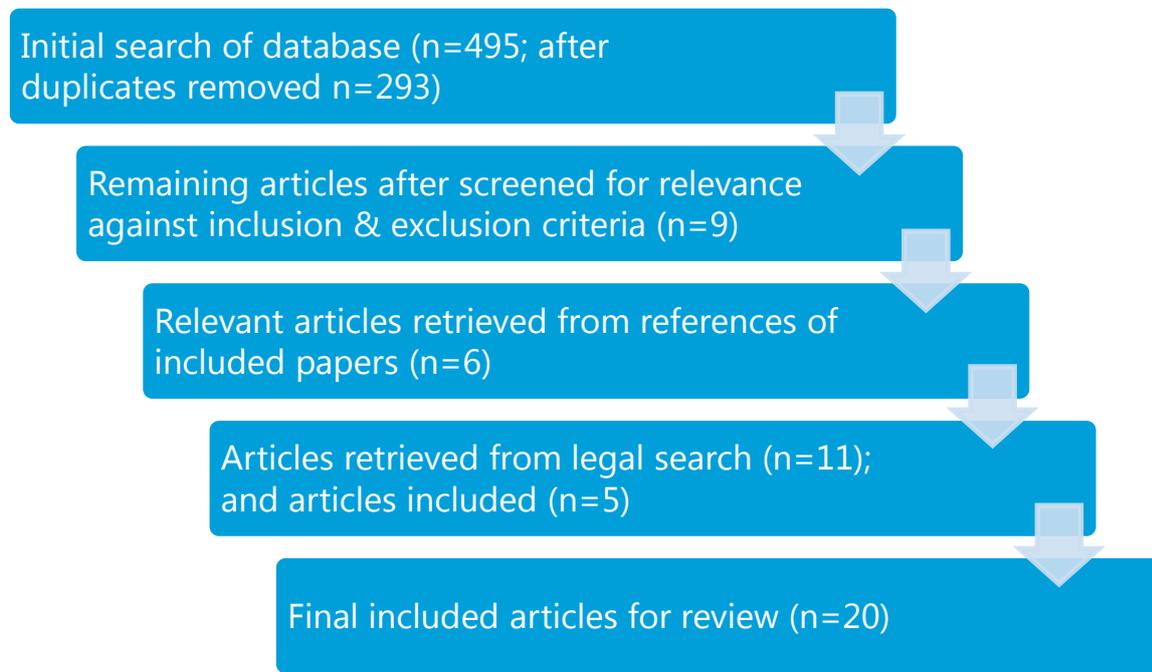


Figure 1: Summary of rapid review method

Comments on included literature

There were few empirical studies that produced evidence specifically related to photo-documentation of medical examinations involving suspected child sexual assault. Other literature included cohorts of both children under 18 and adults, and this was included to the extent that the findings referenced the experience of those under 18. In addition, we examined various commentaries and guideline documents.

Research Question 1

Should medical and forensic photo/video documentation and/or transmission be used in suspected child sexual abuse cases?

- c) What is the impact of collecting medical/forensic photo/video documentation and/or transmission on the health and well-being of the child or young person?

Four empirical studies (represented by five papers) exploring child and parent anxiety in relation to the medical examination for suspected child sexual abuse were included in this section of the review. (Marks et al. 2009; Mears 2003; Rheingold 2013a; Scribano et al. 2010). One similar study (Horner et al. 2009) was excluded as it did not report on, or mention, any type of photo-documentation process during the medical examination.

It appears that most of the research in this area, although still very limited, was published prior to 2004 (Steward et al. 1995; Davies et al. 2001; Waibel-Duncan et al. 1999; Mears et al. 2003; Lazebnik et al. 1994). The paper by Mears et al. (2003) was included in this review since it provided useful colposcopy-specific results on child stress, which the other included studies lacked, and it was published only one year prior to the review period. This section also draws upon results of an unpublished Australian survey of forensic examiners which has not been included in Table 1 (Brown 2010).

Scribano et al.'s (2010) cross-sectional study of 175 child/parent dyads in the USA found that most children were not severely distressed by medical examinations for suspected child sexual abuse (which included colposcopy). No information was given regarding when sexual abuse took place for participants, that is, acute sexual abuse compared with past sexual abuse. The direct impact of the colposcopy procedure was not analysed separately in this study. The research team reported that 17.1% of children were significantly distressed prior to the examination which decreased to 15.4% post-examination. There was a modest parent/provider-child agreement of the level of anxiety that children experienced.

Adolescent girls' responses to video colposcopy were explored in a US intervention study of investigations of possible child sexual abuse (Mears et al. 2003). Seventy-seven girls aged 11 to 18 years participated, with 51 returning for follow up at three months. Thirty percent of the most recent abuse occurred within the last month, 39% between one month and one year and 31% over one year. The intervention involved a standard medical examination using video colposcopy with no control group. Parents were able to observe the monitor if they wished. After this, the physician conducted a short educational session regarding genital anatomy, abuse issues and sexually transmitted infections with the patient (and presumably the parent). Prior to the medical examination, adolescents were assessed for their anticipation of the medical examination, level of anxiety, responses to stressful situations via information-seeking or information-avoiding behaviours and knowledge of genital anatomy. After the examination and education session with the physician, participants were again assessed for their anticipation of the examination and levels of anxiety. At three months' follow-up, participants were re-assessed for their knowledge of their reproduction and genital anatomy. Overall, girls had significantly more positive anticipations post-examination than before ($p < 0.001$), while anxiety levels decreased between pre- and post-examination ($p < 0.001$). Just over three-quarters of the girls chose to watch the examination on the monitor and most found it a positive experience. Girls who received special education (because they had an intellectual disability or other special needs) had more negative perceptions of colposcopy than other girls ($p < 0.005$). Information-avoiding behavioural coping styles were significantly associated with more positive anticipations of the medical examination, although there was also a trend for more negative perceptions of video colposcopy. No significant age differences were found in this study after accounting for multiple comparisons. There was also no significant improvement in knowledge of genital anatomy at three months' follow up compared with pre-examination.

An Australian study by Marks et al. (2009) used a prospective quantitative and qualitative design to explore the expectations and emotional responses of children and their parents to the medical examination (including colposcopy). There were 71 children (90% female), with 67 caregivers and a comparison group of 204 children who also presented at the same hospital for suspected child sexual abuse and who were compared with participants in terms of demographic, assessment and abuse details, but who were not invited to participate in the study. Colposcopy was used in 25% of cases in the participant group. This was the only study that included an individual analysis of the impact of colposcopy directly, although still inadequately, on parental and child well-being.

Overall, children and parents did not find the medical examination as stressful as expected, and children were less distressed than their parents. Qualitative data indicated that parents' levels of distress were guided by their children's reactions, in that parents calmed down once they realised their children were not distressed. A lack of knowledge about the medical examination and having an older child (over 12 years old) were significantly associated with increased parental distress. The only significant association between the use of colposcopy and outcomes was that where colposcopy was used, there was less parental distress before the examination ($p < 0.01$). Although most parents expected their child to be stressed about the medical, only 66% of children reported being scared before the medical. One negative response was: "I didn't want to have it because last time there was a video". Another was: "Not actually ready for anything touching me down there and that it may hurt a bit". However, the authors reported that most negative responses referred to injections and blood tests. The research team reported that the 'use of the colposcope and/or the knee-chest position were not associated with increased reports of distress'.

The last empirical study included in this section is a US randomised controlled trial which tested the impact of an educational video intervention on children's and parents' distress about the medical examination (including colposcopy) (Rheingold 2013a). Sixty-nine participants and their caregivers were included in the study (35=video intervention, 34=control) at a hospital-based child protection unit with a follow up period of six weeks. Most children were aged less than 12 years old (89.6%) and no information was reported in the paper on when abuse took place. The 20 minute video provided education on examination procedures, the investigation process, ways for parents to help their children in the future, and several relaxation strategies to use during the examination. Overall, the video intervention significantly increased caregiver knowledge and decreased stress during the medical examination. Although there was decreased distress from pre- to post- examination, there were no significant differences between groups who had the video education and those who did not. There was no direct analysis conducted on the impact of the video intervention on colposcopy-related distress. The authors also examined the descriptive data from interviews with the children and caregivers to better understand the impressions and reactions about the medical examination (Rheingold, 2013b). They found there was limited awareness of the medical examination and its purpose. While half of the caregivers and less than half of children felt worried about the exam, the greater a caregiver's knowledge of the medical examination, the more likely they were to be anxious before it. However, the reverse was true for children, in that knowledge of the examination was associated with decreased levels of anxiety. Again no direct analysis was conducted of knowledge or well-being effects directly from the colposcopy procedure.

Lastly, an unpublished survey of Australian forensic examiners by Brown (2010) is of relevance to this section of the review. Thirty-three doctors and nurses (one job role was unknown) completed a web-

based survey about their experiences of photo-documentation and how they perceived their patients' acceptance of, and response to, photo-documentation. Results showed that most clients consented to undergoing genital photography, although clinicians indicated that many patients had reservations about it. Forensic examiners expressed the view that client anxiety was a barrier to using photo-documentation. Given this study is unpublished and not peer-reviewed, limited weight can be placed upon it.

None of the above studies examined the long-term impacts (more than three months) of photo-documentation on child health and emotional stress, nor the use of photo-documentation in court.

d) What is the impact of using forensic/medical photo-documentation on the reliability and accuracy of the clinical assessment?

Evidence on differences in quality of clinical findings when photo-documentation is used/ not used

MacLeod et al (2009) analysed 42 live telemedicine consultations with two rural under-served hospitals. The equipment comprised a videocamera attached to a colposcope with zoom on both, feeding into a videoconferencing unit. This provided live interaction from parents, child and examiner using video and audio which was secure and encrypted. The mean duration of the consultations was 71 minutes. As a result of the teleconferencing, there were changes in interview methods (47%), the use of the multi-method examination technique (86%) and the use of adjunct techniques (40%). Appropriate use of these examination techniques has been shown to improve accurate injury identification in child sexual abuse cases (Boyle et al 2008). For acute assaults there were changes in collection of forensic evidence (89%). Ranking of skills and telemedicine effectiveness was high, with a majority of cases scoring ≥ 5 on a 7-point Likert scale. This study shows that child abuse clinicians in a tertiary centre can use telemedicine to effectively make positive changes in paediatric sexual assault examinations, with significant implications for improving the quality of care received by children in under-served rural areas.

Finally, the only other study of possible relevance in this section comes from Heger (2011) who cites an old paper by Muram (1989) in which 130 sexually assaulted girls were evaluated with and without a colposcope. Abnormalities were detected in 92 girls by unaided examination and an additional 4 by colposcope.

Factors associated with differences especially regarding clinical supervisory relationships across rural and urban settings

It is understood that tertiary settings in NSW usually have the advantage of on-site training and review and that current practice of documentation and peer review for rural areas usually includes phone conversation, exchange of multiple hard copy records of notes, standard registered postal-delivered images, CDs and softcopy documents in the form of email attachments. Telemedicine needs large bandwidth, expensive equipment and on-site technical support (Foster & Whitworth 2005). Two examples of a web based platform are ELVIS and WAPALOGIC.

Another example used in the USA is TeleCAM which is a remote web-based application for child maltreatment assessment, peer review and case documentation (Thraen et al 2008). The data is standardised, uses coded terminology and is structured, secure and can support visual imaging. It

provides a database for continuous quality improvement, research, training images, reference and examination standards and uniform access to multiple sources of case information in one case file. It enables secure case reviews between satellite sites and urban child maltreatment experts, with storage of digital images and the opportunity to store a longitudinal case repository with secured access for multiple participants at different locations. The remote feature of TeleCAM uses the internet to bring child maltreatment expertise to the remote site without incurring exorbitant costs and the need for cumbersome equipment.

In this early assessment by Thraen et al (2008), data was collected from 3 rural sites (6 participants) and 1 urban referral tertiary centre (5 participants). Users in rural areas were not technologically challenged, and like those in urban areas understood the capabilities of a web-based system (Thraen et al 2008).

Evidence regarding the role played by photo-documentation in second opinions

Using a web-based on-line survey using colposcopic photographs to assess accuracy of diagnosis, Adams et al (2012) reported that child abuse paediatricians, examiners who perform sexual abuse examinations on a regular basis, examiners who regularly reviewed cases with an expert, and examiners who keep up-to-date with the current research, had higher total scores in terms of accuracy of diagnosis. Child abuse paediatricians had better results than paediatricians (34.8 questions correct from 41 vs 30.1) and SANES (34.8 vs 29.3). Review of cases with an expert and staying up to date with the literature is essential for non-specialist clinicians who examine less than 5 children per month for suspected sexual abuse (all had scores <30).

Paediatric emergency medicine physicians had a mean total score significantly lower than the group of first time takers of the survey. Review of cases at least quarterly by a child sexual abuse expert using photo-documentation significantly increased the score in all professional disciplines.

Muram & Simmons (2008) (in Adams 2011) reported a 42% correct response rate for resident doctors and a 58% correct response rate for specialists in paediatrics, family medicine, emergency medicine and gynaecology when shown photographs of common paediatric gynaecological conditions. Several were incorrectly identified as being due to sexual abuse.

e) What is the impact of collecting forensic photo-documentation on the legal outcomes?

There are very few empirical studies that address this issue specifically in relation to child sexual assault. There is a wider body of literature that explores the impact of forensic evidence generally on the likelihood of prosecution. Forensic evidence may include, for example, the presence of semen or pubic hairs, and so goes beyond photographic documentation of injury. There is also a body of literature on the relationship between ano-genital injury and the likelihood of prosecution, but much of this literature does not differentiate the findings for adults and children.

The studies that provide data in relation to the issue of photo-documentation of medical examinations in relation to child sexual assault are described below. Given the small number of studies within the period from 2004 onwards this data is not presented in the form of a separate table.

Hansen, Mikkelsen, Sabroe and Charles (2010) conducted a study involving 482 children referred to the police for a forensic medical examination in North Denmark in order to determine whether or not abnormal anogenital findings lead to a higher rate of prosecution and conviction, compared with

normal findings. While colposcope was used to evaluate the anogenital findings which were classified as normal, nonspecific, and abnormal, the authors did not state whether the photo-documentation, the written forensic report or both were used as evidence in subsequent trials. They found that 38% of the 426 girls and 20% of the 56 boys had abnormal anogenital findings while 31% of the girls and 52% of the boys had normal findings. The legal outcomes were known in 440 cases. Of these, only 190 (43%) were prosecuted and 165 defendants (87%) were convicted.

Convictions were correlated with the age of the child in that convictions increased with the increasing age of the child. Sex was also a predictor, in that defendants accused of abusing boys were more likely to be convicted, as were defendants who confessed. Duration of the abuse was another significant predictor for conviction. However, no relation between abnormal anogenital findings and the decision to prosecute or conviction was found in the study.

Similar results were found in a French study by Saint-Martin, Bouyssy, Jacquet and O'Byrne (2007) of medico-legal reports in all sexual assault cases (756) reported in Tours during a 7-year period. Of the 68.3% of cases involving children under 15 years, the authors found that genital trauma occurred in 6.8% of the girls and 6% of the boys. Various genital injuries were documented (including tears/lacerations to the hymenal membrane) and because colposcopy is not generally used at the Centre for Victims of Sexual Assault in Tours, it is assumed that photo-documentation of these injuries did not take place. Nonetheless, anoscopy was performed in 68% of cases where anal trauma was observed. Overall, 36.3% of all defendants were convicted while the presence of body and/or genital trauma was not associated with conviction. The authors concluded that successful prosecution depended on the quality of the victim's testimony.

It may be that the differences in the legal systems in European countries accounts for the lack of correlation between medical evidence and legal outcomes¹ since the results of Hansen et al (2010) and Saint-Martin et al (2007) differ from studies conducted elsewhere. In a study involving 497 children in a midwestern county in the USA, Palusci et al (1999) retrospectively investigated the case outcomes of all children aged 0 to 17 years referred for medical evaluation for possible child sexual abuse in 2 separate periods: 1991-1992 and 1995-1996. While 17.4% of children had an abnormal examination finding, no information was given about the use of a colposcope during the examinations of the children. The authors found that a positive medical examination finding predicted issuance of a warrant, CPS substantiation, and a finding of guilt better than disclosure by the child or behavioral symptoms.

More recently, Jewkes, Christofides, Vetten, Jina, Sigsworth and Loots (2009) undertook a study to investigate the association between documented injuries and DNA and case progression through the criminal justice system in South Africa. An analysis of a representative sample of 2,068 attempted and completed rape cases reported to 70 randomly selected Gauteng province police stations in 2003 found that 1,547 cases of rape (85%) had medical examinations. While the types of documented anogenital injuries were discussed by the authors, the study appears to have relied upon paper records of clinical findings since no details were given about whether a colposcope had been used to document those injuries.

¹ Similar results were reported by Hagemann, Stene, Myhre, Ormstad and Schei (2011) in relation to reported cases of rape (January 1997-June 2003) of women over the age of 16 years old in the Norwegian county of Sør-Trøndelag in that documentation of injuries was not associated with charges being laid.

Out of 771 suspects who were arrested, only 14% (209) of cases went to trial. Of those, 31 (14.8%) adult cases and 44 (21.1%) cases involving children resulted in a conviction. DNA evidence was available in only 22 cases, although the presence or absence of injuries were documented in all other cases. Although Jewkes et al (2009) found that documented injuries were not correlated with arrest, they were associated with the likelihood of children's cases (but not adult's) being prosecuted. In adult cases, a conviction was more likely if there were documented injuries, whether non-genital injuries alone, ano-genital injuries alone, or both nongenital and ano-genital injuries. DNA was not associated with case outcome for either adults or children.

Gray-Eurom, Seaberg, and Wears (2002) also sought to determine the association between physical evidence and legal outcomes for all sexual assault cases reported in Duval County, Florida, during a 2-year period. Variables included the age and race of the victim, evidence of trauma (body, genital or both), presence of sperm, weapon use, and whether the victim knew the assailant. While 821 sexual assaults were reported, 801 forensic examinations were performed with evidence of trauma in 202 of the examinations, although colposcopy was unavailable. A suspect was only identified in 355 (44%) of the 801 cases involving a forensic examination. Of those, 271 arrests were made while 153 defendants (56.5%) had charges dropped, 89 (32.8%) were found guilty, 2 (0.74%) were found not guilty, and 27 cases (10%) were pending or unavailable for review. Logistic regression analyses found that victims aged younger than 18 years, the presence of trauma (body, genital, or both), and the use of a weapon by the assailant were significantly associated with successful prosecutions.

Overall, the above studies show that photo-documentation of genital injuries can assist in successful prosecutions and convictions in child sexual assault cases. Similar findings have been reported in studies involving adult complaints of sexual assault (McGregor, Du Mont and Myhr, 2002; McGregor, Le, Marion and Wiebe, 1999; cf Du Mont and Parnis, 2000). Since a number of trial, evidentiary and victim factors are correlated with outcomes in legal cases, complex regression analyses need to be conducted in any one study to determine what type of physical evidence and what type of presentation of physical evidence is associated (if at all) with the decision to prosecute and trial outcomes.

Research Question 2

How should forensic photographic documentation be used and/or collected?

- a) How does the modality of collection/use of photographic/video evidence during a forensic or medical examination affect the well-being of the child?

Two of the empirical studies (Mears et al 2003; Marks et al. 2008) referred to in question 1a were also used for question 2a, in addition to other commentary style papers that gave further helpful insight into the topic.

Which modality of collection is more acceptable?

Most of the studies in this section refer to colposcopy only and give no comparison with other modalities. In addition, tele-health style papers on the topic of child sexual abuse do not consider the impact on the child in their study objectives (MacLeod 2009; Thraen 2008; Miyamoto 2014; Frasier

2012). However, in their literature review of the use of colposcopy Templeton and Williams (2006) suggest that video colposcopy is more advantageous and dynamic for diagnostic purposes than still photographs produced using a colposcope. In the study by Mears et al. (2003) which examined adolescents' responses to video colposcopy, the authors observe that allowing children to observe the examination for themselves reduces their anxiety and gives them a sense of control.

What timing is more acceptable?

In a commentary discussing the timing of the medical examination in suspected cases of child sexual abuse, Christian (2011) argues that it is dependent on a number of factors, including the need to identify the injury, collect forensic evidence, and provide infection and pregnancy prophylaxis, as well as the clinician's availability and experience. There are also factors that relate directly to the child in terms of their age, medical and emotional needs. Christian (2011) cautions that although the need to complete the medical investigation in a timely manner is very important, the child's emotional interests have to come first in all cases. Most children, even if resistant at first, can normally be gently reassured to undergo the medical examination without any problems, although Christian (2011) does not directly discuss the most acceptable timing for the colposcopic examination for children.

Who should be present?

Like most medical examinations it is presumed beneficial that a non-offending parent or caregiver is present. Indeed, in the study by Marks et al. (2009) children were found to have lower stress levels when a parent was present during the examination and were less likely to express fear. Parents who were not present during the examination were more likely to have higher stress levels.

Other studies also recommend that a child undergoing a medical examination should be able to choose whether they would like a particular person (parent, a nurse or other support person) present to provide support (Giardano & Finkel 2005; Laraque et al. 2006). In the case of young children, it may be helpful to have the parent or caregiver assist with the examination or to sit on the table and allow the child to rest their head and trunk on them which allows the child to see the examination on the monitor and feel like they are participating (Laraque et al. 2006).

Is there any type of storage that is more ideal?

There is no research that assists in guiding best practice in this area. In general terms, storage on a hospital medical record system with secure password protection would seem to be an appropriate standard.

How should the need for accuracy of evidence and the child's well-being be balanced?

Several studies agree that the child's wishes need to come first and the child needs to be able to choose whether they want to have the colposcope used or not (Laraque et al. 2006; Adams 1997; Giardano & Finkel, 2005). Laraque et al. (2006) recommends creating ground rules with the patient, for example, the child can stop the examination at any time or tell the examiner if something hurts. However, there are cases, although rare, which cannot be deferred due to the urgency of the

anogenital injuries, for example, deep vaginal or anal laceration. In such cases the child could be sedated.

How should the emotional stress of the child be reduced?

As previously mentioned, the study by Mears et al. (2003) discussed the benefits of allowing teenage girls to watch themselves on the monitor during their examination and how this practice reduced the girls' stress levels. Giardino and Finkel (2005) recommend providing choices for children during the examination which is especially important for older children as it imparts a sense of control. However, Mears et al. (2003) found that girls who received special education (because of an intellectual disability or other special needs) had more negative responses to the video colposcopy than those in a general education program. Mears et al (2003: 24) observed that:

information was not available regarding the nature of the disabilities these adolescents were experiencing and it is unclear why they responded more negatively to questions regarding colposcopy and the medical examination. It is possible that these adolescents had limited comprehension of the questions being asked as well as the information being provided. This finding suggests that clinicians should be particularly responsive to the needs of girls who receive special education, perhaps by providing more careful, slower explanations with visual prompts of the procedures and medical findings. Further studies are necessary to determine ways to most effectively help this population.

The authors also point out that physicians need to be aware of girls who have information-avoidance style coping behaviours, and allow them to choose whether or not they want to watch the monitor. In her review of the role of photo-documentation in suspected child sexual abuse, Adams (1997) emphasises the importance of always giving the child or parent the right to refuse photo-documentation, given the sensitivity of the issue for some.

Physician behaviour can have an important impact on a child's emotional response to the medical examination. Marks et al. (2003) reported that parents and children emphasised the importance of staff attitudes and the explanations they offered and made comments such as, "I felt better when she (doctor) talked me through the check-up", "Calm" and "No apparent judgment of situation". The authors consider that the medical examination requires not only expertise and training but also interpersonal skills of empathy and good communication. They note the importance of an examiner being able to assess and respond to the child's anxiety and emotions, and provide strategies to reduce stress and to relax the child.

In their review of medical examinations in suspected child sexual abuse cases, Laraque et al. (2006) emphasise the importance of explaining fully what the medical examination will entail to the patient and parent. They recommend that the examiner provide an explanation of all the equipment that will be used such as the colposcope. An opportunity should be given for the child to examine the equipment for themselves and feel comfortable with it. Examples given are turning the light on and off, and looking at their hand on the monitor.

Paradoxically, Marks et al. (2003) found that while parental stress was associated with a lack of knowledge about the medical examination, this lack of knowledge was also associated with both parents and children finding the examination less stressful. This finding may be due to the cross-sectional nature of the study which does not enable a causal relationship to be established between factors and outcomes.

It highlights the need for further research in this area along with the suggestion that further work is needed to establish the ideal timing and content of information given to parents and children about the medical examination (Marks et al. 2003). Rheingold et al.'s (2013a) randomised controlled trial of a psycho-educational video for children and their caregivers provides preliminary evidence that an educational video is well-received by families, increases caregiver knowledge, and decreases stress during the examination.

Under which circumstances does a certain modality lead to more positive child well-being compared to another?

The research literature does not provide information on this issue.

b) How does the modality of collection or sharing of photographic/video evidence affect the reliability and accuracy of the clinical assessment?

Evidence whether telehealth/telemedicine consultations provide additional expertise to less experienced practitioners possibly living in rural areas

There are a number of studies that have evaluated the role of telemedicine generally in improving diagnosis and treatment. Others have examined this specifically in relation to child sexual assault cases. The latter are included in Table 2. However, traditional telemedicine requires large band width connections, expensive equipment and on-site technical support.

There is clear evidence that telemedicine improves diagnosis and treatment. In a study by Nesbitt et al (2005) on the introduction of telemedicine services to 7 rural under-served communities, satisfaction was rated high by both rural providers and patients on pre- and post-survey of 500 residents. Diagnosis and treatment was provided for 16 specialities, including dermatology. There was an increase in the local community perception of local health care quality and an indication that telemedicine may result in a decrease in the desire and need for local patients to travel outside the community for healthcare services. Marcin et al (2005) analysed 223 specialty telemedicine consultations (not sexual assault) and found a change in diagnosis in 48%, change in treatment in 81.6% and clinical improvement in 60%.

In the USA, telemedicine is increasingly used to overcome barriers and inequity in access to specialty services. Studies in a variety of clinical settings have demonstrated that telemedicine can increase the quality of care (Marcin et al 2005; Dharmar 2013), improve patient and provider satisfaction (Marcin et al 2005; Whitten & Love 2005) and improve community members' selection of locally available care (Nesbitt et al 2005; Marcin et al 2005). For example, Dharmar et al (2013) found that physician-rated

quality of care was higher for children in rural emergency departments who received critical care consultations with telemedicine from an academic Children's Hospital than for patients who received either telephone consultations or no consultation. Telemedicine consultations were associated with more frequent changes in diagnostic and therapeutic interventions and higher parental satisfaction than telephone consultations.

Telemedicine has also been shown to have benefits in relation to the quality of forensic examinations for child sexual assault in rural communities. When an allegation of child sexual abuse occurs, specialized training in interviewing, forensic evaluation, evidence collection and diagnosis is necessary for the provision of quality care (Miyamoto et al 2014). In rural areas assessing child sexual abuse there are problems with lack of staff,, medical inexperience, working in isolation with subsequent burnout and less training for medical practitioners. Examinations were more complete when supported by specialists through telemedicine consultations (MacLeod et al 2009) as well as being of higher quality and more accurate. (Miyamoto et al 2014). The data included acute and non-acute presentations with notes and photographs/videos.

Eckert et al (2004) tried to determine if the examiner's level of experience or gender was associated with the prevalence of documented trauma. They showed that more ano-genital injury is detected by less experienced female registrars. No difference was seen with male doctors' level of experience regarding anogenital injury, or in either gender recording general body injury. Examiners who routinely use colposcopy document more trauma. In addition, examiners in rural areas do not treat a sufficient volume of patients to attain and retain proficiency and may work in relative isolation leading to burnout (Townsend & Campbell 2009).

Botash (2005) found that motivated medical providers demonstrated significant knowledge gains regarding the evaluation of child sexual abuse following participation in an educational program. This new knowledge, however, was not enough to provide competency in the interpretation of genital findings or in offering legal advocacy to families. Competence in these areas may represent the domain of experts, not primary care providers, and further studies are needed to determine how much experience is necessary to provide competency in these areas. Provision of guidelines and protocols are generally ineffective as educational strategies.

Studies have found that inexperienced healthcare providers struggle to correctly identify pre-pubertal female genital anatomy (Dubow et al 2005, Starling et al 2009). Exposure to child abuse training and abused patients was highest for paediatric residents, then emergency residents and lowest for family medicine residents who were least comfortable in handling such cases (Starling et al, 2009). In a national US survey, only 19% of residents correctly identified all 3 structures on a genital photograph. Many, including 67% of all family medicine residents, incorrectly diagnosed a normal genital examination (Starling et al, 2009). Seventy percent of female genital examinations diagnosed by a paediatric emergency physician as abnormal were subsequently re-diagnosed on re-examination as normal by child abuse-trained physicians (Makoroff et al 2002).

Burton et al (2002) found a significant increase in referrals for child sexual assault after telemedicine was introduced in Kentucky. Adams et al (2012) identified that diagnostic accuracy in child sexual abuse examinations could be significantly improved by a review of cases at least quarterly 'by a recognised expert in child sexual abuse medical evaluation' using photo-documentation. Controlling for professional discipline, this practice variable significantly correlated with better test performance

regarding knowledge and interpretation scores irrespective of case load. Using a multiple regression analysis of factors associated with a higher score there was no significant association with the number of years since first training was obtained, total number of child sexual abuse examinations performed, number per month or frequency of attendance or presentations at conferences or the number of times testifying in court.

Frasier et al (2012) developed 30 peer reviewed training cases for medical examiners of child sexual abuse using a secure web based telehealth application (TeleCAM). Available information was stratified as minimal, moderate and comprehensive for both positive and negative abuse findings. The highest degree of inter-rater reliability was found in cases with moderate to comprehensive information about the history, interview, digital images and additional medical and laboratory findings. Cases with minimal data indicated that availability of differing levels and types of information contribute to variability in diagnostic findings.

Evidence that compares the quality of assessment with modalities such as still images, videos, live sessions and off-line tele-consultations

Ernst et al (2010) investigated the validity and reliability of a scoring system to evaluate the variable image quality in relation to adult sexual assault, as forensic images must accurately represent the patient's presentation. Deficiencies may include lack of clarity in details; 'noise' in areas expected to be smooth; loss of information in highlights or darker areas; and inaccurate representation of colour. The Photo-documentation Image Quality Scoring System was developed to score image quality in photographs and rate digital photographic documentation of female genital injuries after sexual assault. It is based on image quality as a summation of 11 items: naturalness and usefulness as well as factors such as sharpness, smoothness, colourfulness, brightness, tissue surface, tissue margins, tissue colour, and tissue landmarks.

In a review paper, Laitinen et al (2013) agreed with Ernst et al (2010) that for image quality to be high there must be a high degree of usefulness and naturalness. The image must satisfy the intended purpose (usefulness) and be a precise representation of the crime scene (naturalness) (Ernst et al 2010).

In a commentary paper, Pillai (2005) discusses the outcome in a 2003 British case (discussed in question 2c below) where the judge found the quality of photo-documentation of a child's hymen case had misled several doctors to a diagnosis of sexual abuse, after a re-examination found no genital injuries. However, neither the judge nor the re-examining doctors at that time had the advantage of subsequent research showing hymenal injuries heal at various rates and, except for deeper lacerations, leave little or no evidence of the previous trauma (McCann et al 2007). Pillai (2005) concludes that 'where there is doubt about the colposcope photographs the gold standard has to remain the clinical examination' which should be discussed with a supervisor to clarify any areas of doubt.

Video recording is a more dynamic method which allows recording of three-dimensional structures. Compared to still photography, the images are moving and there is the potential for the introduction of sound on the recordings (MacLeod (2014) for the purposes of telemedicine. In a survey using still images of genital and anal findings, Adams et al (2012) found that participants asked for additional views or improved quality of the photographs. Being able to view an entire examination on video may

provide a more complete picture of the tissues and how they change with different types of examination techniques.

Evidence that the recommended modality of collection may vary with determinants such as location, physician experience, geographical setting.

Of necessity, rural settings have less staff with suitable experience and less dedicated equipment.

Miyamoto et al (2014) compared the quality and diagnostic accuracy of paediatric sexual abuse forensic examinations conducted at five rural hospitals which had access to telemedicine with three rural hospitals without such support. Of the five telemedicine hospitals, four did not have an existing child abuse program prior to installation. One had an established program, yet relatively inexperienced examiners (less than ten child examinations). All three comparison hospitals had long standing child sexual abuse programs. The decision to obtain consultation was ultimately the rural provider's decision.

For telemedicine sites, consultants were available for real-time videoconferencing even to their homes while for comparison sites consultants were available for examination support by telephone.

Evaluation demonstrated that those using telemedicine had significantly higher quality scores in domains such as consent, the general examination, the genital examination, documentation of findings, overall assessment and summed total quality score. Those using telemedicine also had higher scores in photo/video quality, completeness of examination and accuracy of diagnosis compared to examinations conducted by established practitioners without telemedicine consultation.

Frasier et al (2012) points out that both the examiner and reviewer of sexual abuse examinations have various degrees of experience, levels of specialisation and biases that may influence their opinions regarding physical evidence. TeleCAM is a method of developing inter-rater reliability among child sexual abuse experts using training through a standardised set of cases supported by web-based information technology.

Evidence that factors such as image storage and transmission and other factors can affect image quality and clinical assessment

In a review paper, Pillai (2007) examined the role played by 'confirmatory' medical opinion in English and Welsh courts in fourteen cases of alleged sexual abuse. Photo-documentation occurred in five cases with images being available for review in four cases. The quality of the photographs was generally poor. In two cases they were so poor that no opinion could be made about the anatomy from the images. The inadequate photography resulted in lack of peer review to improve examination methods, understanding of acute and healed trauma and other medical conditions, and hindered independent expert opinion. On occasion it resulted in re-examination.

In a discussion of the benefits and limitations of photo-documentation, Pillai (2007) noted that the colposcope is an excellent illuminated magnifier which allows good quality photography, thus reducing the necessity for repeat examinations. On the other hand, images may not display the true depth of field and are not the same as examining the child directly, an issue that is discussed in some detail below.

c) How does the modality of collection or sharing of photographic/video evidence affect the legal outcomes?

There is no research evidence that provides evidence about how the modality of collection or sharing of photo-documentation affects legal outcomes.

Case law analysis

The case law provides important insights into the role of photo-documentation in civil and criminal proceedings, an issue that we consider is important for this review, particularly since no studies were found which compare outcomes in civil proceedings where photo-documentation has and has not been admitted as evidence.

In making a case law analysis we note that individual cases may represent no more than anecdotal evidence regarding the circumstances of a particular child in a particular place and time. However, the cumulative experience of the courts in the reception of photo-documentation is important, and individual cases illustrate issues of wider significance. Where a case sets a precedent or establishes a guideline, it may have an impact upon the practice of medicine, generally speaking, and in the reception of evidence in subsequent cases. It may also affect the credibility of experts giving evidence in relation to child sexual abuse matters. This has been the experience in the UK in relation to the quality of photo-documentation and guidelines on the number of practitioners who are required to give a clinical opinion about the occurrence of child sexual abuse.

Where the medical examination of a child does reveal forensic evidence this may initiate a police investigation and may be adduced in evidence in subsequent criminal proceedings. Such evidence may also be admitted in civil proceedings, such as Family Court cases involving custody disputes and proceedings in the NSW Children's Court which are initiated by the Department of Family and Community Services under the Children and Young Persons (Care and Protection) Act 1998.

Nonetheless, the photo-documentation of child sexual abuse findings is a highly contentious type of evidence in both civil and criminal proceedings, not least because of the quality of the digital photography and the conversion of three dimensional physiological structures into a two-dimensional photograph. The variation in the qualifications and experience of, and level of (dis)agreement between, medical professionals who subsequently interpret such evidence adds to its contentious nature.

Complete and accurate identification of a child's genital injuries and documentation of those injuries are essential for photo-documentation to be relevant in a criminal or civil case where sexual abuse is a fact in issue. In criminal trials, the guilt or innocence of the defendant may depend on the interpretations of such evidence by medical experts. In Family Court proceedings, a parent may lose a custody battle as a result of the admission of photo-documentation, while in the NSW Children's Court, parents may lose contact with their child on a permanent basis.

As discussed in the cases below, one of the problems for forensic examiners is the complexity associated with accurate identification and documentation of genital injuries 'because of the discrete nature of microtraumatic injuries' which are not easily detectable (Ernst et al, 2011: 31). Incomplete documentation and disagreement amongst experts raises several legal problems since:

[p]oor or absent visualization of injury in photographs that cannot demonstrate usefulness may complicate or undermine the criminal justice processes by questioning the quality, accuracy, and credibility of the SANE's written record (Ernst et al, 2011: 36).

However, this is an issue for all experts (doctors and SANEs alike) who give evidence about the forensic examination of a child. The view that SANEs should use photo-documentation consistently and routinely in the evaluation of sexual assault cases in order to increase the reliability of this form of evidence and their credibility in court as experts (Ernst et al, 2011: 37) is equally applicable to doctors in order to meet challenges of bias and challenges to competency. If photo-documentation is used irregularly by an examining doctor or nurse, if there is a policy of not photographing normal genitalia or if 'bad' photographs are deleted (Ernst et al, 2011: 37), then both doctors and SANEs are open to challenge in court.

This section will discuss the issues and problems that arise when photo-documentation is adduced in evidence in civil and criminal trials.

Impact of photo-documentation in civil proceedings

The United Kingdom (UK)

There is no empirical research that documents the impact of photo-documentation in civil proceedings although there are four cases in the UK that have examined the efficacy of photo-documentation in care proceedings against parents and/or carers. These cases all deal with the misdiagnosis of sexual abuse and resultant miscarriages of justice. The facts of these cases are given in some detail in order to identify the assumptions and mistakes that led to these misdiagnoses. In three cases, proceedings were commenced against the parents of children suspected of being sexually abused on the basis of the genital examination by one doctor and/or a single colposcopic photograph. In each case, it was the re-examination of those photographs and/or a subsequent genital examination that resulted in the case against the parents collapsing.

In *Newport City Council v GW and others*², the English High Court discussed the catastrophic impact of a misdiagnosis of sexual abuse in care proceedings brought by a local authority against TW and GW, the parents of three girls aged 9, 7 and 5 years of age at the time. Proceedings were initiated when Dr M, a consultant paediatrician, examined all three girls after suspected sexual abuse by an older male child. In relation to the youngest girl, C, Dr M found a 'gaping' vaginal opening and 'grossly abnormal findings' of the child's hymen which indicated 'clear signs of [chronic] vaginal penetration'.³ Although the older male child would not have had the opportunity to commit chronic sexual abuse, no adult was identified as the perpetrator. Nonetheless, the three girls were removed from their home on the grounds that their parents had failed to protect them from sexual abuse. A second consultant paediatrician, instructed by the Children's Guardian, agreed with Dr M's findings, based on a single still colposcopy photograph taken by Dr M.

When the parents sought a third opinion from Professor Heppenstall-Heger, an internationally recognised paediatrician at the Los Angeles Children's Hospital, Dr Heger examined the same still photograph and opined that it showed no abnormality and the 'principal sign relied on as diagnostic

² [2006] EWHC 3671 (Fam).

³ Ibid [6] (Masterman J).

of sexual abuse, the loss of hymenal tissue, was probably explained by the fact that asymmetric traction had been applied by the examiner [Dr M] giving a false impression that tissue was missing'.⁴

When C was re-examined by different techniques by Dr P, Dr P confirmed 'with a series of colposcopy stills, that she found no abnormality'.⁵ On the basis of this new evidence:

the Local Authority's case fell apart ... [although] ... [t]here could have been an even more serious miscarriage of justice than has already occurred. ... [N]o-one who has listened to the evidence in this case could possibly avoid feeling the utmost sympathy for what this family has gone through. The children returned home as soon as the mis-diagnosis was confirmed ... but it would be idle to suppose that two years' separation can be repaired in a weekend.⁶

At the time of C's original examination, consultant paediatricians limited colposcopy photographs to one only because of storage problems and fears that more images could be used as pornography if they fell into the wrong hands. Videos were also not made for the same reasons.⁷ This practice meant that '[t]he single photograph taken by Dr M succeeded in misleading four paediatricians' compared to the final examination of C in which 14 colposcopic photographs demonstrated there were no abnormalities. Masterman J concluded that if there had been 'fuller use of the colposcope's capabilities in the first place', including videos, the proceedings by the Local Authority may never have been commenced⁸ and re-examination of C would have been avoided.

Masterman J also made other criticisms of the examination of C, including the fact that the 'knee/chest position was not used, nor the technique of flooding the vestibule with water'.⁹ He concluded that a diagnosis of sexual abuse by one doctor ought to be treated with caution, although the Court reported that 'the practice in Gwent is now that two doctors of consultant status carry out a joint examination where sexual abuse is suspected'.¹⁰

In another case three years earlier, a 2½ year old girl was examined in December 2000 after telling her aunt that 'Daddy "hurts my bum"'.¹¹ During the examination in which T was extremely distressed, Dr Drummond reported that 'her hymen showed a dilated orifice ... and inability to relax. ... There was a deep transection notch at 7 o'clock and the hymenal orifice was approximately 0.6cm'. Only one colposcopic photograph was taken. Dr Drummond concluded that these signs together with T's behaviour and verbal report of abuse suggested that T had been sexually abused and was at significant risk.¹² When T's parents resumed living together in 2001, care proceedings were commenced by the Local Authority. Soon after, T and her sister were removed from their home and placed with foster parents.

⁴ Ibid [32].

⁵ Ibid.

⁶ Ibid [34].

⁷ Ibid [45].

⁸ Ibid [46].

⁹ Ibid [50].

¹⁰ Ibid [43].

¹¹ *A County Council v Y and K* [2003] EWHC 3090 (Fam), [4] (Holman J).

¹² Ibid [5].

A second genital examination, in which two photographs were taken, found a degree of healing of T's hymen followed by a possible further episode of trauma. When the parents were granted permission to instruct an independent consultant physician, Dr Evans, she reported that the two photographs taken by Dr San Lazaro did not resemble the single photograph taken by Dr Drummond, with the deep notch/transection at 7 o'clock having disappeared and a new marked bump of tissue, marked narrowing of the hymenal tissue and marked increased vascularity.¹³ After a joint consultation, Drs Evans and San Lazaro concluded that 'these findings can only be explained by repetitive penetrative sexual abuse'.¹⁴ A third opinion by Dr Sunderland supported these conclusions.

When the court granted permission for Drs Evans and Sunderland to examine T in June 2003, they reported that '[e]xamination in the knee/chest position showed a smooth, normal, thin hymen with no evidence of injury' with the only abnormality being a hymenal cyst. After taking 11 still photographs they also reported:

We were both independently puzzled and then concerned that these still photographs taken at our examination did not accurately represent what we had seen. We both expressed the view that had we seen these photographs in isolation, we would have been misled.¹⁵

As a result, they concluded that the earlier photographs (from 2000 and 2001) were unreliable and misleading.¹⁶ It is worth quoting further from a letter written by Dr Evans:

the genitalia are three dimensional structures and the hymen itself is a dynamic structure which will relax and open depending on a number of factors including the skill of the examiner, the relaxation of the child and the examination position used. ... [Accurate photography depends on] the technical expertise of the photographer, the type of equipment used ... and the particular anatomical idiosyncrasies of the person being examined. ... Had we seen some of the photographs which we took [of T] in isolation ... [they] may have misled us into thinking there was some abnormality of the hymen present when in fact there was not. This experience reinforces the fact that colposcopic photography, even though it is considered to be 'the gold standard' in respect of examination, ... should still be approached with caution.¹⁷

Dr Sunderland concluded that because of these discrepancies, 'the gold standard has to remain the clinical examination' and that courts must be aware of the dangers associated with diagnoses that are made on the basis of colposcopic evidence alone.¹⁸ When a further opinion was received from Dr Heger in California, she noted that:

"if you have an acute, traumatic tear of the hymen the edges do not spontaneously grow back together. If there is a deep transection extending to the base or even near to the base... that defect

¹³ Ibid [13].

¹⁴ Ibid [16].

¹⁵ Ibid [29].

¹⁶ Ibid [30].

¹⁷ Ibid [31].

¹⁸ Ibid [32].

would persist unless it is surgically repaired". ... If the final examination was normal ... "the hymen was always normal".¹⁹

Dr Heger also concluded that:

The original medical examination was misread because of a non-specific finding of the bump or fold that ... was probably attached to a longitudinal intravaginal ridge that could and did pull the redundant hymen back and forth depending on position and traction.²⁰

The experts who gave evidence in this case may have benefited from subsequent research by McCann et al (2007) which showed that the hymen can heal after injury, although the degree of healing is highly variable. McCann et al (2007) reported that of the pre-pubertal lacerations that went through the hymenal membrane into the surrounding tissues, 68% healed with evidence of the transection still present while only 15% of deep lacerations (that beyond the midpoint of the membrane) healed with no evidence of the previous laceration. For pubertal lacerations, some healed with little trace of the previous injury while others healed, revealing deep transections than previously seen. McCann (2007: e1101) reported that 'the sites of the healed lacerations varied in smoothness, continuity, and width' although 'no scar tissue was identified' on any of the healed hymens.

Unfortunately, the lessons of the above two cases had not been learned in the UK by 2008. In *Leeds City Council and YX & ZX*, another family suffered the painful separation of parents and children after Mrs YX had found a small amount of blood in her daughter's underpants.

Two subsequent genital examinations of A found an abnormal, gaping hymen with a smooth rolled edge. Dr Harty concluded that 'the presence of a rolled edge ... is compatible with repeated trauma'.²¹ At all times A denied that she had been sexually abused and her parents denied any knowledge of the sexual abuse of their daughter. Another examination a few months later by Dr Hobbs confirmed that the genital and anal findings were supportive of penetration. As a result a report was made to Social Services although social workers reported that A did not come across as 'a troubled child'.

Six months later, Dr Hobbs conducted a genital examination with a colposcope and concluded that A's genitalia and anus again exhibited signs of penetration. As well, a series of bruises on A's thighs suggested that A had been self-harming after A's father wondered whether his daughter might have 'been jamming a pencil into her legs'.²² Although Dr Hobbs later found signs of healing, a second opinion 6 months later resulted in a colposcopic video from which Dr Skelton concluded that 'A has been sexually abused chronically, over a long period' anally and vaginally.²³ Together with the supposed self-harming episode, Dr Skelton concluded that A was 'at extremely great risk of ongoing abuse'.²⁴ Even though Dr Skelton, a close working colleague of Dr Hobbs, was not considered to be

¹⁹ Ibid [35].

²⁰ Ibid [40].

²¹ *Leeds City Council and YX & ZX* [2008] EWHC 802 (Fam), [12] (Holman J).

²² Ibid [46].

²³ Ibid [65].

²⁴ Ibid [66].

completely independent²⁵, A and her brother were removed from the family home in April 2007 and placed with their grandparents on the basis of Dr Skelton's report.

After examination of the colposcopic photos and videos taken by Drs Hobbs and Skelton, another consultant paediatrician, Dr Crawford, reported in May 2007 that 'although none of the signs could be said to confirm sexual abuse', the constellation of symptoms, including apparent self-inflicted bruising, loss of appetite, nightmares and insomnia, were 'highly suggestive' of sexual abuse.²⁶ The court granted permission for A to be examined by Drs Crawford and Hobbs together, which amounted to A's seventh genital examination. They found a 'smooth, normal hymen' and normal anal folds and no anal dilation.

When permission was granted for the parents to seek another opinion from Professor Heger, she examined all previous colposcopic photos and videos and reported that 'all the images are within the range of normality' including the findings of reflex anal dilation which 'occurs frequently in children selected for non-abuse ... (up to over 49%)'²⁷. Professor Heger concluded that:

[t]here is no history from this child. We continue to believe and teach that history is the most important component of any evaluation for possible abuse ... In this particular case, none of the findings ... are diagnostic of sexual abuse, therefore without a history that diagnosis cannot or should not be made.²⁸

A report from two dermatologists (Drs Clark and Yell) solved the question that this case raises: how could four paediatricians arrive at conclusions of sexual abuse in the face of consistent denials by the child that she had been sexually abused? The apparent evidence of self-harming behaviour was one of the key misleading factors. Dr Clark reported that the rash or bruises observed by Dr Hobbs in September 2006 coincided with a music lesson in which A had been slapping her thighs in time to the music. Subsequent inquiries with the school revealed that all the children in the class had been slapping their thighs to several songs. In the absence of any other evidence of self-harm, and in light of the dermatological report that A suffered from atopic dermatitis/eczema with a flare response after thigh slapping, the court eliminated self-harm from the constellation of symptoms.

When Dr Yell examined A, she found that A's skin 'wheals easily with rubbing' while examination of the photos from the peri-anal examinations indicated 'minor erosions on the anal verge', that is a loss of epidermis which 'would be in keeping with minor peri-anal fissures' which would explain the small amount of blood in her underpants.²⁹ The court accepted this evidence as a 'credible, possible, non-abusive reason' for the unexplained blood and found that the Local Authority had not proved, on the balance of probabilities, that A had been sexually abused.³⁰

²⁵ Justice Holman described the selection of Dr Skelton as 'deeply regrettable' since she 'lacked the complete independence that is required for a second opinion': *ibid* [59].

²⁶ *Ibid* [74]; [76].

²⁷ *Ibid* [92].

²⁸ *Ibid* [91].

²⁹ *Ibid* [98]-[99].

³⁰ *Ibid* [121].

Holman J considered that, since this case had involved the opinions of five paediatricians, it served 'to underline how subjective assessment is in this field'. In the end, Drs Hobbs and Crawford accepted that the images of A's genitalia were within the range of normal while Dr Skelton could not say that they were abnormal.³¹ In light of the 'overall state of the medical evidence' Holman J doubted whether 'the anus was ever abnormal, and whether the reported appearances and the available still and video images are not the result of traction applied during the examinations'.³² His Honour concluded that because of the subjective element involved in the '[t]he medical assessment of physical signs of sexual abuse', unless there is clearly diagnostic evidence of abuse, ... purely medical assessments and opinions should not be allowed to dominate' over an express denial by the child.³³ As a result of these medical opinions, this case became:

every parent's nightmare. ... A became subjected to no less than eight invasive intimate examinations ... [while] [t]he children were removed from home for eleven months ... Both children must inevitably have been emotionally damaged by the experiences.³⁴

The subjectivity involved in medical assessments of sexual abuse was also highlighted in *Lillie & Reed and Newcastle City Council and Others*³⁵ because of the differences in the evidence given by three consultant paediatricians in a libel action involving Lillie and Reed who had been employed in a children's nursery operated by the Newcastle City Council. They had brought proceedings against the Council after they were both acquitted of several counts of child sexual abuse involving a number of children.

Since one of the paediatricians had 'slipped into the role of advocate because she was so affected herself by the children's trauma', the court highlighted the importance of colposcopic photographs with peer review and the need for doctors not to give evidence outside their areas of expertise:

in an area where there is so much room for subjective interpretation based on "experience", it is important to be sure that external factors are not allowed to convert a neutral or non-specific findings into a ... diagnostic finding of abuse. ... It is one thing to say of a child ... that her sexualised behaviour strongly suggests trauma. It is quite another to elevate neutral notches or nodules into a physical indicator purely because of the behavioural signs. Unhappily, in this case there are some examples of Dr San Lazaro ratcheting up the physical findings as she went along.³⁶

Indeed, courts in both civil and criminal cases must be satisfied that medical experts clearly explain the factual basis on which findings of sexual abuse are made and the extent to which those findings are influenced by extraneous (that is, non-expert) considerations.³⁷

Australia

³¹ Ibid [107]-[109].

³² Ibid [136].

³³ Ibid [143].

³⁴ Ibid [141].

³⁵ [2002] EWHC 1600 (QB).

³⁶ *Lillie & Reed and Newcastle City Council and Others* [2002] EWHC 1600 (QB), [396] (Eady J).

³⁷ *Makita (Australia) Pty Ltd v Spowles* [2001] NSWCA 305.

In Australia, oral evidence of colposcopic examinations and photo-documentation of sexual abuse (if available) is commonly admitted in Family Court cases in which allegations of sexual abuse are an issue in parenting proceedings.³⁸ In particular, such evidence can assist in resolving whether there is an unacceptable risk of sexual abuse occurring in the future if a parent is allowed to spend time with a child.³⁹

Because the Family Court is not a court of criminal jurisdiction, it 'is not obliged to definitively resolve a disputed allegation of sexual abuse ... but to make the order which will best promote and protect the interests of the child'.⁴⁰ In making such an order 'the court must determine whether on the evidence there is a risk of sexual abuse occurring if custody or access be granted and assess the magnitude of that risk'.⁴¹

Although there are very few Australian cases that have discussed issues to do with photo-documentation, like the situation in the UK, different medical interpretations of photo-documentation of ano-genital findings have also been evident in Australian parenting matters with experts disagreeing about the presence of hymenal clefts and transections.⁴² In *Stapleton & Hayes*, disagreement between experts together with other evidence resulted in the Family Court deciding that 'the allegations of sexual abuse of the children [were] groundless'.⁴³ On the issue of expert disagreement the Court noted:

[Dr G] has received some training in the examination of children alleged to have been the victims of sexual abuse ... but her finding of penetration of N, which plainly left open the strong inference of sexual abuse, was brought into question by the evidence of Dr MN. That establishes the need to distinguish her observation from a normal finding by supplemental testing such as floating the hymen with saline when such observations are made and the need to document the observation with photography ... In the result, the medical evidence does not prove sexual abuse has occurred. Nor does it prove that sexual abuse has not occurred. In fact it takes the matter no further.⁴⁴

Issues in relation to the quality of medical evidence

The unreliable nature of medical evidence of genital injuries in the context of trials was highlighted in a study by Pillai (2007: 503) who investigated 'the validity of opinions given by 27 doctors to the court in 14 cases of alleged child or adolescent sexual abuse' in the UK. She found that photo-documentation was only performed in five cases but the 'quality of the photographs was generally poor' while in two cases 'they were so poor that no opinion could be made about the anatomy from the images'.

In several cases in her study, Pillai found that the hymen was described as 'gaping' yet studies demonstrate 'such a wide range of hymen orifice measurements in girls with no suspicion of abuse

³⁸ See for example, *Dupleix & Duroc* [2008] FamCA 626; *Dalziel & Belladonna* [2009] FamCA 254; *Stapleton & Hayes* [2009] FamCA 437; *Lett & Lett* [2014] FamCA 529.

³⁹ *M v M* [1988] HCA 68; (1988) 166 CLR 69.

⁴⁰ *Stapleton & Hayes* [2009] FamCA 437, [13] (Moore J).

⁴¹ *M v M* [1988] HCA 68; (1988) 166 CLR 69 [24] (Mason CJ, Brennan, Dawson, Toohey and Gaudron JJ).

⁴² See *Stapleton & Hayes* [2009] FamCA 437, [71]-[73] (Moore J).

⁴³ *Ibid* [114].

⁴⁴ *Ibid* [123]-[124].

that this measurement is not of value in determining the likelihood of penetration' (Pillai, 2007: 509). Pillai (2007: 509) also reported that some of the cases in her study involved conclusions of trauma to the hymen because of the presence of tags or notches yet '[a] review of published data on non-abused children conclusively shows that a hymen tag and a mound of tissue are common non-specific findings' and '[n]otches in the anterior part of the hymen are common and naturally occurring'.

Several cases also involved findings of sexual abuse as a result of anal findings yet '[n]o consensus exists currently among experts as to how anal dilatation should be interpreted' (Pillai, 2007: 509). Pillai (2007: 512) concluded that:

[t]here was a strong tendency for common non-specific findings to be described as 'consistent with abuse'. This terminology is problematic in any civil or criminal process as it is likely to be misunderstood as supportive evidence.

Pillai (2007: 512) concluded that out of the 14 cases she reviewed, 'there was no case where the anatomical findings were agreed to be highly indicative of sexual abuse' while '[t]he lack of photo documentation ... seriously hinders independent expert opinion and on occasion will result in repeat examination of the child'. Furthermore, she found that '[m]any opinions were inconsistent with the evidence-base ... and were not explained or justified'. As a result, she arrived at similar conclusions to the judges in the cases discussed above:

[w]hen forensic experts start to make value judgements serious miscarriages of justice can ensue. The doctors examining the children had usually been briefed by ... other agencies ... [and] [t]heir views may have 'contaminated' the doctor's objectivity ... so fuelling the tendency for common non-specific findings to be described as 'consistent with(the suspicion or allegation)' (Pillai, 2007: 512; italics in original).

Criminal proceedings

Prosecutorial practice

Fourteen years ago, in *R v Dann* (2000), counsel for the Crown observed that medical evidence:

is commonly called in cases of alleged sexual assault whether the complainant is male or female. It is also common in these cases for the medical evidence to be 'neutral'.⁴⁵

We do not know what the current practice is in 2014 since we have no information about the extent to which colposcopic photographs and videos are relied upon by police investigators and prosecutors when considering whether to charge and/or prosecute a defendant. We also do not know the extent to which this medical evidence is routinely admitted in child sexual assault trials in NSW and other jurisdictions since trial transcripts are not available to researchers without permission. Even if they were, this question would involve many months of research.

A senior prosecutor in Victoria has said that, in her experience in Victoria, 'the view of courts and defence counsel is that such photo-documentation is too prejudicial to go before a jury; the injuries are verbally described by the doctor instead'.⁴⁶ The probative value of such evidence may be outweighed by its prejudicial effect on the grounds that a jury's emotional reaction to the photos or

⁴⁵ (2000) NSWCCA 185, [14].

⁴⁶ Nanette Rogers SC, personal communication, 28 October 2014.

video means they will give the evidence too much weight when deciding on the guilt or innocence of the defendant.⁴⁷

Case law

There are very few reported cases that have discussed the relevance and admissibility of photo-documentation of child sexual abuse injuries in Australia. Generally speaking, where positive, such evidence amounts to corroboration of a child's allegations of sexual abuse while photo-documentation which reveals no ano-genital injuries is considered to neither exclude nor support allegations of sexual abuse.⁴⁸ Nonetheless, expert medical evidence of sexual abuse 'is very powerful' because, to the jury, it amounts to 'real' evidence (Pillai, 2007: 513). But if the physical findings have been misinterpreted, as Pillai (2007) found in the 14 criminal cases she reviewed in the UK, wrongful convictions may ensue.

One of the critical issues in the Australian case law concerns the admissibility of medical findings that are neutral or equivocal about whether or not sexual abuse has occurred. The NSW Court of Criminal Appeal considers that it may be unnecessary for the prosecution to call 'neutral' medical evidence when sexual abuse is alleged to have occurred many months before.⁴⁹ There is now a practice of not adducing neutral medical evidence as a result of the decision of the NSW Court of Criminal Appeal (CCA) in *R v Dann*⁵⁰ since the Court considered that it was 'regrettable' that court time and the time of busy professionals should be wasted on evidence with 'such limited materiality'. As a result, a practice has developed in which the Crown and defence agree 'that the evidence not be called' and 'join in a request that the trial judge direct the jury that the jury should attribute no significance to the absence of the evidence because it is immaterial' in order to prevent jury speculation.⁵¹

Even when the medical evidence in a criminal case is not neutral, it may not be accepted as conclusive of a complainant's allegation of sexual abuse. In *R v C, Ap*⁵² medical evidence of penetration and a vaginal infection was admitted in a child sexual assault trial. In this particular judge-only trial, in which the defendant was found guilty in relation to four out of five counts of sexual abuse, Judge Beazley stated:

I accept the evidence of the medical witnesses. The combined evidence of the four medical practitioners is neutral in either establishing or excluding the commission of any of the counts alleged in the Information or any of the uncharged acts. I have no doubt, as found by Dr Kummerow, that there had been trauma to the hymen of SLC and that that trauma had been caused by a penetrative injury. It does not in any way assist in determining who or what caused that trauma or when it occurred. At its highest that evidence is consistent with the allegations of SLC. I remind myself that such evidence should not be treated as in any way bolstering the evidence of SLC.⁵³

⁴⁷ See s 137, *Evidence Act* 1995 (NSW).

⁴⁸ *R v H, R C* [2012] SADC 182, [37] (Judge Beazley).

⁴⁹ *Thorne v R* [2007] NSWCCA 10 at [24]; *R v RTB* [2002] NSWCCA 104.

⁵⁰ (2000) NSWCCA 185.

⁵¹ *Ibid* [15]. See further *Thorne v Regina* [2007] NSWCCA 10, [24] (Howie J).

⁵² [2006] SADC 53.

⁵³ *R v C, Ap* [2006] SADC 53, [71] (Judge Beazley), referring to *R v Dann* (2000) NSWCCA 185.

In another South Australian case, *R v Mittiga (No 2)*⁵⁴, medical evidence was admitted in a child sexual assault trial involving three complainants. The medical evidence included a positive finding of sexual abuse as the result of a colposcopic examination of one of the complainants:

Dr Edwards ... discovered on colposcopic examination of L's genital area that there were [recent] two abrasions ... to the mucosal surface of the mucosal vestibule ... at the entrance of the vagina ... There was no evidence of any injury of the hymen itself. ... Dr Edwards examined L five days later, and ... the abrasions were no longer visible. Dr Edwards' forensic medical opinion in relation to L was that the genital injury observed was adequately accounted by her history of recent penile/vaginal penetration. A diagram of the injuries was tendered as P21. ... I note that Dr Edwards' findings are potentially consistent with the evidence of ... L [who] ... indicated that she did suffer pain.⁵⁵

Nonetheless, the complainants' testimonies were considered to be sufficiently strong and consistent such that the judge would have accepted their accounts even if unsupported by the medical evidence.⁵⁶

⁵⁴ [2010] SADC 68.

⁵⁵ *Ibid* [162].

⁵⁶ *R v Mittiga (No 2)* [2010] SADC 68, [200] (Judge Stretton).

5 Discussion

A number of clear findings emerge from this literature and case law review.

First, photo-documentation has become a well-accepted practice in the medical examination of children and adolescents for suspected child sexual abuse, where the requisite consent has been given. The National Children's Alliance (US), for example, recommends photo-documentation as the standard for proper care (2008). Table 3 summarises various guidelines for the use of photo-documentation.

There is no reliable empirical evidence to support the conclusion that photo-documentation of the ano-genital region in the course of a medical examination causes distress additional to the stresses associated with the medical examination itself, and the circumstances that have made such an examination necessary. There is some evidence that the video display of the examination may actually be helpful in reducing stress for adolescents, even if it is only to allow them to see a part of their body they would otherwise be unable to see. Because there may be additional distress for patients with special needs, such as those suffering an intellectual disability, it is important that appropriate information be provided to ease their distress and to gain the requisite consent. Even where there is parental consent, if the use of photographic equipment will cause distress, it should not be used in the absence of compelling reasons.

The clinical advantages of photo-documentation are well-understood, particularly in relation to the provision of second opinions. Indeed, one of the standards put forward by the National Children's Alliance (US) is that 'Photo-documented examinations are reviewed with advanced medical consultants. Review of all exams with positive findings is strongly encouraged'. Timely anonymous expert review of sexual abuse medical findings can now be accomplished via a web based system using colposcopy or digital photography (Telehealth Institute for Child Maltreatment) throughout the USA. A response is obtained within 48 hours. It is designed for educational and quality improvement purposes.

As the case law shows, the availability of photo-documentation is important forensically. Its availability to experts in the field can prevent false positives. In the English cases discussed above, if photo-documentation had not been able to be examined by paediatric leaders in the field, serious miscarriages of justice would have occurred. Conversely, photo-documentation may help avoid false negatives. The expert may see abnormalities that the examining doctor does not observe.

Secondly, the quality of the evidence gained through photo-documentation is important. The optimal form of evidence is a video of the whole examination. Not only is it easier to take a continuous video than to take a succession of still photographs, video recording reveals the three-dimensional physiological structures which may prevent the misrepresentation of clinical features in photographs that were described in *A County Council v Y and K* above.

Still photographs may be taken while video-recording an examination, but on their own, as the case law shows, they may be difficult to interpret or liable to mislead. It may well be dangerous to initiate court action on the basis of a single colposcopic photo or on the basis of one paediatrician's ano-

genital examination. Thus, a series of photographs or videos should be taken, and should be assessed by at least two examining doctors before apparent abnormalities form the diagnostic basis for a finding of child sexual abuse. Caution is warranted especially where the child gives no history of sexual abuse.

Thirdly, photo-documentation of normal findings is of little or no forensic value, and the retention of photographic or video-recorded material after a conclusion of normality has been reached (after appropriate review), is unlikely to be of any clinical value. From a legal perspective, it needs to be recognised that the genital examination of a child or adolescent after suspected sexual abuse 'is most often normal, even in the face of a history that would suggest genital injuries should be present' (Pillai, 2007: 503). One study of over 2000 children referred for investigation of child sexual abuse estimated the likelihood of injury as less than under 5%. Most of the children in this study had been seen within a week of the abuse, yet 95.6% of the children who reported abuse showed no physical abnormalities on the medical examination. Only 5.5% of the girls, and 1% of the boys, who reported penetrative intercourse had abnormal findings (Heger et al, 2002).

This is an important issue to be taken into account in formulating any policy on photo-documentation. There are very good reasons to use colposcopy in medical examinations because of its effectiveness in detecting injuries and abnormalities that would not be readily visible to the naked eye (Laitinen et al, 2013). There is also value in the non-expert examiner obtaining the benefit of a second opinion, especially in relation to ambiguous findings. However, once it is established that there are no abnormal findings, there is no reason to keep those records, and certainly no reason to make them available either to the prosecution or defence. From a legal point of view, photo-documentation of normal findings is unlikely to be admissible because it is of little or no probative value. The normal finding assists neither the prosecution nor the defence, for the great majority of sexually abused children do not suffer ano-genital injury, and even those who do suffer injury may not suffer lasting damage. It is now well established that some injuries to the hymen can heal without scarring (Berkowitz, 2011) so if the medical examination occurs months or years after the alleged abuse, abnormalities that might have been evident at the time of the abusive event may no longer be evident.

Much of the concern about photo-documentation is that it will be of little forensic use and its availability to the defence or use in the trial will have negative repercussions for the victim (Spangaro et al, 2014). However, where there are signs of genital injury, this evidence is likely to have some degree of probative value and may assist a jury in reaching a verdict, as well as providing objective evidence that can be examined by a defence expert.

It may be that legislation is needed to limit the unnecessary access and retention of photo-documentation of normal ano-genital findings, as well as limiting access to photo-documentation of positive findings. Two options include:

- a. Legislation to permit the deletion of photo-documentation of normal ano-genital findings, notwithstanding the normal rule that medical records should be kept for thirty years; and
- b. Legislation to limit the availability of photo-documentation of positive findings to expert witnesses and the legal representatives of the parties, for the purposes of forming an opinion concerning the alleged sexual abuse. Photo-documentation should not be tendered in evidence before a jury unless the interests of justice in having the photo-documentation produced outweigh the need to protect the privacy of the complainant. If the judge does

admit the photo-documentation in court, s/he may make such directions concerning the manner in which it is presented as will best preserve the privacy of the complainant.

Fourthly, it is important that photo-documentation is of high quality if it has the potential to affect the outcomes in court proceedings and, in this electronic age, security and incorruptibility must be guaranteed (Thraen et al 2014).

Limitations

As requested, the focus of this review has been on the literature from 2004 onwards and therefore may not provide a comprehensive review of the whole subject matter and relevant issues. Nonetheless, this discussion draws upon key literature in the area of photo-documentation in child sexual abuse, some of which is prior to 2004, therefore incorporating a broad scope of opinion and experience, and context for policy considerations.

6 Appendix 1

Table 1: Empirical academic papers primarily focused on the impact on the well-being of the child

Author, country	Design, Child age, % male, Sample size, setting	Outcome measures & intervention (if applicable)	Findings	Comments on quality of evidence	Summary of evidence
Mears et al. (2003) USA	Intervention style study with no control group; ages 11 to 18; % male: 0; n= 77 & 51 at 3 mths f/up; Medical Centre.	<p><i>Pre-examination</i></p> <ul style="list-style-type: none"> • STAI • Miller Behavioural Style Scale (MBSS) • Questions regarding anticipation of examination • Knowledge assessment of sexual function and anatomy <p><i>Intervention:</i></p> <ul style="list-style-type: none"> • Standard medical examination using video colposcopy. Parents could choose to observe monitor or not. • 5-7 min educational presentation, with 	<ul style="list-style-type: none"> • 79% of girls chose to watch examination on video monitor • Girls had significantly more positive perceptions post examination than pre (P<0.001). • Anxiety decreased as well from pre to post (P<0.001) • Anxiety was negatively associated with anticipation pre and post. • Information avoiding coping styles associated with positive anticipations 	Although an intervention was used, there was no control group. However it does provide information on possible relationships between anxiety, coping and anticipation.	The majority of girls in this study chose to watch the examination on the monitor, had more positive perceptions and less anxiety about the medical examination & colposcopy after the exam than before.

Author, country	Design, Child age, % male, Sample size, setting	Outcome measures & intervention (if applicable)	Findings	Comments on quality of evidence	Summary of evidence
		<p>handout, by physician to parent and child.</p> <ul style="list-style-type: none"> • Discussion with patient on abuse issues. <p><i>Post examination:</i></p> <ul style="list-style-type: none"> • STAI • Questions on perceptions of examination and video colposcopy. <p><i>3 mths f/up:</i></p> <ul style="list-style-type: none"> • Knowledge assessment of sexual function and anatomy. 	<p>of examination but trend towards negative associations with video colposcopy.</p> <ul style="list-style-type: none"> • 		
<p>Marks et al. (2009) Australia</p>	<p>Prospective cohort study over 2 yrs; ages 3-17; % male: 9.9; participants: n=71 & non-participants: n=204; carers: n=67; Westmead</p>	<p>Before & after examination:</p> <ul style="list-style-type: none"> • Parent & child: Children's Anxiety and Pain Face Scales • Doctor: Genital Examination Distress Scale (GEDS) • Qualitative open-ended questions for child & parent. 	<p>Specific findings:</p> <ul style="list-style-type: none"> • 25% used colposcope associated with parent less stressed before P<0.01 • 4% colposcopy photos taken = sample size too small to conduct significance test. • use of the colposcope 	<p>Only 25% of cases involved colposcopy; only cross-sectional & qualitative so no causal pathway can be concluded. Not much detail given in relation to direct impact of colposcopy.</p>	<p>Medical examination is not as stressful as expected. Increased parental distress was linked with lack of knowledge about the medical & with child being >12 yrs old. Parents & children expressed importance of staff attitudes, explanations offered & child/doctor relationship.</p>

Author, country	Design, Child age, % male, Sample size, setting	Outcome measures & intervention (if applicable)	Findings	Comments on quality of evidence	Summary of evidence
	Hospital		<p>was not associated with increased reports of distress.</p> <ul style="list-style-type: none"> 54% of children expressed negative feelings about the medical examination. 24% gave a positive response. Negative comments mainly referred to injections & blood tests. Increased parental & child distress associated with child being 12 years or older. 		
<p>Scribano et al. (2010) USA</p>	<p>Cross-sectional parent/child dyads; ages 8-18 yrs; % male: 33%; Dyads: n=175; Child</p>	<p>Before & after examination:</p> <ul style="list-style-type: none"> Parents & child: Multi-dimensional Anxiety Score for Children (MASC-10) Doctors: GEDS 	<ul style="list-style-type: none"> Significant levels of distress (moderate to severe) for the child pre- (17.1%) and post-examination (15.4%). Both parent & child report significantly less anxiety post examination than 	<p>Cross-sectional so no causal pathway can be concluded. No specific results reported for stress related directly to the use of colposcopy.</p>	<p>Majority of children were not severely distressed. Although parent & provider were able to detect child distress, child self-report is still important.</p>

Author, country	Design, Child age, % male, Sample size, setting	Outcome measures & intervention (if applicable)	Findings	Comments on quality of evidence	Summary of evidence
	Assessment Centre		<p>compared with pre (t-score=55.8; 53.1 p<.001).</p> <ul style="list-style-type: none"> Significant & positive correlation between child self-report, parent (pre PCC=0.3257; post PCC=0.3403) & provider observed distress (pre t-score=0.1904;0.2090) 		
Rheingold et al. (2013 a & b) USA	Randomised controlled trial (RCT) and structured interviews; ages 4-15; % male: I=37.1, C=35.3; n=69 (35=video intervention, 34=control) & their caregivers;	<ul style="list-style-type: none"> Caregiver questions on knowledge of medical examination. Caregiver & child asked about video satisfaction <p><i>Pre & post examination:</i></p> <ul style="list-style-type: none"> Doctor: GEDS State Trait Anxiety Inventory for Children (STAI-C) State Trait Anxiety Inventory (STAI) Subjective Units of Distress Scale (SUDS) 	<ul style="list-style-type: none"> Video intervention was well-received by families, increased caregiver knowledge, and decreased stress during the examination. Caregiver and child distress decreased from pre to post examination across both conditions, and, unexpectedly, there were no significant 	Fairly good quality RCT. No separate analyses conducted on direct impact of photo-documentation on child and parent well-being.	An educational video at the time of the medical examination for child sexual abuse for children & their caregivers, is promising for reducing stress levels and increasing knowledge.

Author, country	Design, Child age, % male, Sample size, setting	Outcome measures & intervention (if applicable)	Findings	Comments on quality of evidence	Summary of evidence
	local child advocacy centre.	<p>6-wk f/p:</p> <ul style="list-style-type: none"> • Beck Anxiety Inventory (BAI) • Child Behavior Checklist for Children (CBCL) • Trauma Symptom Checklist for Children (TSCC) <p>Intervention = 20-min educational video on medical exam; Control = standard care.</p>	<p>differences in these decreases between groups.</p> <ul style="list-style-type: none"> • 49.3% of caregivers & 44.1% of children reported feeling worried about exam • 61.8% of caregivers 94.1% of children reported not being aware of what exam involved • 		

Table 2: Empirical academic papers primarily focused on the impact on the reliability and accuracy of the clinical assessment

Author, country	Design, Child age, % male, Sample size, setting	Outcome measures & intervention (if applicable)	Findings	Comments on quality of evidence	Summary of evidence
Adams et al. (2012) USA	Web-based survey; Medical professionals: n=141; USA.	<p><i>Survey questions:</i></p> <ul style="list-style-type: none"> Regarding professional background, education, clinical experience, & participation in case review. Participants viewed photographs & clinical information from 20 cases, then answered 41 questions regarding diagnosis & medical knowledge. Answers chosen by an expert panel were used as the correct answers for the survey. 	<ul style="list-style-type: none"> Mean number of correct answers was 31.6. Child abuse paediatricians (CAP) performed significantly better than paediatricians & nurses (34.8 vs. 29.3, $p < 0.05$). Scores were lower for paediatricians & nurses who treated <5 children monthly. CAP who regularly review cases with an expert ($p = 0.0008$), & examiners who keep up-to-date with research ($p < 0.0001$), scored the best. 	Cross-sectional so no causal pathway can be concluded.	Suggestive of the need for examiners who do not examine many children monthly, to review cases with an expert and stay to date with the CSA literature.
Botash et al. (2005) USA	Before & after trial design; Practicing medical providers & paediatric residents= 64; various medical	<p><i>Intervention:</i></p> <ul style="list-style-type: none"> Self-paced learning program. Includes course materials, 10 min video of genital examination findings. Questions on cases. <p><i>Outcome measures:</i></p> <ul style="list-style-type: none"> Before and after assessment of 	<ul style="list-style-type: none"> Average posttest score (26.9/30, SD=4.13) was significantly higher ($P < .001$) than pretest score (20.4/30, SD=1.65). 59.4% of providers did not correctly interpret the exam findings, 	Well-designed study although does and provides useful insight into medical examiner knowledge and experience however does not give specific information on knowledge and use of	Early evidence for the useful gains of a self-learning educational program for medical examiners in suspected cases of child sexual abuse. However experts are still needed for competency in interpretation of genital findings and legal advocacy to

Author, country	Design, Child age, % male, Sample size, setting	Outcome measures & intervention (if applicable)	Findings	Comments on quality of evidence	Summary of evidence
	cnetres.	<p>knowledge of area to test effectiveness of program.</p> <ul style="list-style-type: none"> Assessment included 1 still colposcopic photograph of female adolescent genitalia. 	<p>28.1% did not correctly reassure the child and family, & 39.1% did not indicate an appropriate understanding of legal implications.</p>	photo-documentation.	families. No specific information gained in terms of experience in photo-documentation.
Dubow et al. (2005) USA	Mailed survey; paediatric chief residents: n=139; nation-wide.	<ul style="list-style-type: none"> 38-item questionnaire regarding resident training & clinical practices related to sexual abuse & prepubertal genital examination 2 black & white photographs were included of female genitalia. The same survey had also been sent to chief residents throughout USA 	<ul style="list-style-type: none"> Half of chief residents thought sexual abuse training during residency was inadequate for practice. 64% of chief residents correctly labeled hymen on photograph, but was <ul style="list-style-type: none"> not significantly different from the 62% & 59% physicians who correctly labeled in previous surveys. In the second photograph, 71% correctly labelled the hymen. 	Cross-sectional so no causal pathway can be concluded.	There are variable amounts of training and experience for paediatricians in correctly identifying basic genital structures.
Eckert et al. (2004) USA	Medical record review; >15 yrs; % male: 0; N=662; Urban emergency department.	<ul style="list-style-type: none"> Trained 2nd & 3rd yr obstetrics & gynaecology residents performed physical examination (colposcopic photos only used to document visible trauma) 	<p><i>Prevalence of genital trauma documented:</i></p> <ul style="list-style-type: none"> 2nd & 3rd yr residents = 26.2%, 19.1%, respectively (P=.04) despite similar assaults 	No colposcopic/photo-documentation use differences analysed. Cross-sectional so no causal pathway can be concluded.	This study suggests the gender of the examiner does not make a difference to genital trauma documented however the level of experience may make a difference in documentation in

Author, country	Design, Child age, % male, Sample size, setting	Outcome measures & intervention (if applicable)	Findings	Comments on quality of evidence	Summary of evidence
		<ul style="list-style-type: none"> Variables collected: victim demographics, description of assailant(s), assault description, & physical & laboratory examination findings. One evaluator checked documents within a few days of examination. 	<p>btwn 2 groups.</p> <ul style="list-style-type: none"> Male examiners: 21.0% & female examiners: 21.9% did not differ (P=.8). <p><i>Documented impaired Consciousness:</i></p> <ul style="list-style-type: none"> 3rd yr residents= 45% & 2nd yr=36% (P <0.04) <p><i>Documented a positive toxicology result:</i></p> <ul style="list-style-type: none"> 3rd yr residents= 55.6% & 2nd yr=46.1% (P <0.03) 		<p>some aspects. It must be noted the analysis did not provide photo-documentation use specific results.</p>
<p>MacLeod et al. (2009) USA</p>	<p>Telemedicine program; 7 mths -17 yrs yrs; % male: 0; N=42 from 2 rural hospitals.</p>	<p><i>Quality of care:</i></p> <ul style="list-style-type: none"> Survey instrument to capture data from live consultations. Scores were given on quality of care & the impact of telemedicine on: patient history, physical examination, colposcopic and manual manipulation techniques, interpretation of findings, & treatment plans for child. 	<ul style="list-style-type: none"> Telemedicine consult resulted in changes to interview methods (47%), use of multimethod examination technique (86%), & use of adjunct techniques (40%). Rankings of practitioner's skills & effectiveness of telemedicine consult were high. Majority of cases 	<p>Smaller sample from only two hospitals. Not evident that they used independent reviewers to score consultations.</p>	<p>The use of telemedicine in two rural hospitals showed promising results in improving the medical examination in suspected child sexual abuse.</p>

Author, country	Design, Child age, % male, Sample size, setting	Outcome measures & intervention (if applicable)	Findings	Comments on quality of evidence	Summary of evidence
			scored ≥ 5 on 7-point Likert scale measuring quality and impact of telemedicine.		
McCann et al. (2007) USA	Retrospective record study; 4mths – 18 yrs (47% prepubertal & 53% adolescent); % male: 0; N=239; Multicentre study.	<ul style="list-style-type: none"> • Medical information & photographs were collected from multiple sites • 1 follow-up examination performed for each patient (time difference varied for each patient) • 3 authors evaluated the cases in order to document the healing process & outcomes of hymenal injuries. 	<ul style="list-style-type: none"> • Abrasions & "mild" submucosal hemorrhages disappeared within 3 - 4 days, whereas "marked" haemorrhages persisted for 11 - 15 days. • Only petechiae & blood blisters proved to be "markers" for determining approx age of injury. • Petechiae resolved within 48 hours in prepubertal girls & 72 hours in adolescents 	Descriptive study only, evaluated by three evaluators.	Hymenal injuries healed rapidly and there were no differences in healing rates between the prepubertal and adolescent groups.
Miyamoto et al. (2014) USA	Retrospective medical record review; 0-18 yrs; % male: 9.3%; N=183 (Rural hospital with telemedicine: n=101; rural hospital without	<p><i>Outcome measures:</i></p> <ol style="list-style-type: none"> 1. Impact of telemedicine on forensic examinations: 2 independent paediatric sexual abuse experts evaluated de-identified State of California's Office of Emergency Services (OES) forms & supporting photo/video documentation; 	<ul style="list-style-type: none"> • Evaluation of OES reporting forms showed hospitals with telemedicine had significantly higher quality Scores: general exam, genital exam, documentation of examination findings, overall assessment, & 	Provides early evidence of the effectiveness of telemedicine in 5 rural hospital settings. However the study was not randomised or controlled so conclusions should be made with	Rural hospitals using telemedicine resulted in higher quality examinations and photo/video documentation compared with rural hospitals without telemedicine consultations.

Author, country	Design, Child age, % male, Sample size, setting	Outcome measures & intervention (if applicable)	Findings	Comments on quality of evidence	Summary of evidence
	<p>telemedicine: n=82); 8 rural hospitals (5 had access to experts via telemedicine & 3 did not).</p>	<p>evidence collection, & physical findings from medical records.</p> <ol style="list-style-type: none"> 2. Quality review: Structured implicit review instrument to evaluate OES reporting forms. 3. Completeness & accuracy of forensic examination: Independent reviewer evaluated: photo/video <ul style="list-style-type: none"> • quality, completeness of examination, & diagnostic accuracy 	<p>summed total quality score (p < 0.05 for each).</p> <ul style="list-style-type: none"> • Evaluation of completeness & accuracy of forensic examination showed hospitals with telemedicine • had significantly higher scores in : photo/video quality, • completeness of the examination, & summed total completeness and accuracy score (p < 0.05 for each) 	<p>caution.</p>	
<p>Starling et al. 2009 (USA)</p>	<p>Cross-sectional survey; Program directors: n=53 & residents: n=462 (Emergency=55, Family medicine=54 & Paediatrics=303) Nationwide.</p>	<p><i>Program director survey:</i></p> <ul style="list-style-type: none"> • Program & training characteristics including: size, university, & military affiliation, & urban/suburban/rural setting. <p><i>Resident survey:</i></p> <ul style="list-style-type: none"> • Demographics, • Child abuse training • Patient experience during residency • Satisfaction with training, 	<ul style="list-style-type: none"> • Paediatric programs were larger, and more equipped with child abuse specialists and training for residents in child abuse, compared with family medicine and emergency programs. • Paediatric residents more likely to have exposure to child abuse training and 	<p>Cross-sectional so no causal pathway can be concluded.</p>	<p>Paediatric programs provide more training & resources for child abuse education than emergency medicine & family medicine programs,</p>

Author, country	Design, Child age, % male, Sample size, setting	Outcome measures & intervention (if applicable)	Findings	Comments on quality of evidence	Summary of evidence
		<ul style="list-style-type: none"> • Comfort with 7 aspects of managing child abuse cases • Knowledge of child abuse assessment and treatment quiz. • Required to label black & white photographs of genitalia. 	<ul style="list-style-type: none"> • abused patients. • Comfort in dealing with child abuse was lowest for family medicine residents. • Paediatric residents performed better on knowledge and treatment quiz 		
<p>Thraen et al. (2008) USA;</p> <p>Frasier et al. (2012) USA</p>	<p>Qualitative usability study & development of training cases; N=11 nurse participants (3 remote sites: n=6 & 1 tertiary centre: n=5).</p>	<p><i>Evaluation of TeleCAM usability:</i></p> <ul style="list-style-type: none"> • Interviews and observation by one evaluator. • Participants given set tasks to complete using the TeleCAM: uploading images, creating new cases, editing existing cases, viewing data, & drawing conclusions. • Follow up survey on usability. <p><i>Development of peer reviewed training cases</i></p> <ul style="list-style-type: none"> • 30 cases chosen by expert peer review process. 	<ul style="list-style-type: none"> • Some pros of the TeleCAM given were: ease of entry, quality of photographs, ability to enter extensive information. • Some cons were: increased time for input, image loading and internet access. • Overall few differences between remote and tertiary hospitals in usability in terms of familiarity with the technology & understanding of the program. <p><i>Development of peer reviewed training cases</i></p> <ul style="list-style-type: none"> • degrees of inter-rater reliability was found in 	<p>Small numbers so lack of power to make any generalisations on the effectiveness of this program.</p>	<p>A small number of nurses were able to use this telemedicine style program with relative ease. The development of a peer reviewed training cases for teleCAM demonstrates that high quality information must be available in order to enhance diagnostic accuracy.</p>

Author, country	Design, Child age, % male, Sample size, setting	Outcome measures & intervention (if applicable)	Findings	Comments on quality of evidence	Summary of evidence
			<p>cases with moderate-comprehensive information.</p> <ul style="list-style-type: none"> cases with minimal data had poor kappa agreement 		

Table 3: Clinical guidelines/policies regarding all aspects of photo-documentation in cases of suspected child sexual abuse

Title, association, date & country	Main points	Implications
<p>“Guidelines on Paediatric Forensic Examinations in Relation to Possible Child Sexual Abuse”,</p> <p>Royal College of Paediatrics and Child Health (RCPCH) and the Faculty of Forensic and Legal Medicine (FFLM),</p> <p>October 2012</p> <p>UK</p>	<ul style="list-style-type: none"> • Health needs of the child are paramount • There are certain skills a paediatrician or forensic physician needs in undertaking the forensic assessment, for example, an understanding of child’s developmental, social and emotional needs according to child’s intellectual level; an understanding of consent and confidentiality; competent skills needed in examination & colposcope; awareness of current research etc. • If a single doctor does not have all of the necessary skills needed, another doctor may be present who can complement the skills set. • A permanent record (still photographs, video, CD or DVD) of the genital/anal findings should be obtained whenever these areas are examined. • The aim of photo-documentation is to support the clinical examination so images should be of adequate quality to demonstrate the clinical findings • Further examinations conducted after the initial assessment may not reflect the original findings due to healing or the onset of puberty. • On-going care should be arranged for each child examined, for example, for any ongoing medical assessments and necessary intervention, ensuring that appropriate psychological support is made available. 	<p>Photo-documentation is recommended as the best way to document evidence of genital trauma as it does heal fairly quickly. Good overall guidance on the use of photo-documentation within the forensic examination but does not consider the health and well-being needs of the child directly relating to photo-documentation.</p>
<p>“Photography and Recording of Patients / Clients: Policy Compliance Procedure”</p> <p>Hunter New England Local Health District (HNELHD), NSW Health</p> <p>2012</p> <p>Australia</p>	<p><i>Overall aim of policy:</i></p> <ul style="list-style-type: none"> • To provide a standard approach to photography and recordings of patients / clients of HNELHD services • To ensure appropriate consent is obtained for photography or recording of HNELHD patients or clients • To ensure any images or recordings are identified, stored and disposed in accordance with NSW State Records Act, 1998 <p><i>Key points:</i></p> <ul style="list-style-type: none"> • Permission of any staff, patients and visitors must be sought and obtained before taking any images or recordings. 	<p>Provides detailed practical standards of approach regarding photo-documentation, consent, handling and storage.</p>

	<ul style="list-style-type: none"> • Consent is not required to take or store an image for clinical care purposes however clinician can document consent for clinical photography if desired. • While consent is not required for recording images for clinical care, patients/ clients may withdraw their consent, either verbally or in writing, at any time • Photographs must be securely stored with access by authorised staff only. All recording equipment, storage devices (cards, sticks, DVD's etc) and hard copy recordings must be stored securely when not in use. • Images distributed for Telehealth consultations should be restricted to relevant clinical experts and the staff involved in the patients care. Identifying information should be limited to that necessary to ensure appropriate clinical evaluation. 	
<p>"Guidelines for responding to child abuse, neglect and the impact of family and domestic violence"</p> <p>Western Australia Department of Health</p> <p>2004</p> <p>Australia</p>	<p><i>Relating to photo-documentation:</i></p> <ul style="list-style-type: none"> • Only medical practitioners who have specialist training are to perform a physical assessment of sexual abuse. • Medical examiner to use colposcopy for female genital injury or examination (and photography if available) under anaesthesia/sedation if the child is distressed and in pain 	<p>Not a lot of detail given in this particular report specifically regarding the use of photo-documentation.</p>
<p>"Sydney Children's Hospital Network Policy and Kaleidoscope Greater Newcastle Clinical Guideline on forensic Photography and Videorecording",</p> <p>2012</p> <p>Australia</p>	<p><i>In relation to sexual assault:</i></p> <ul style="list-style-type: none"> • Recordings of a child should not be undertaken if the child objects. The child's experience of abuse should always be taken into account. • Peer review of recordings is essential to improve the reliability and validity of forensic medical examinations • Secure storage and transportation of media used for recordings is essential • Recordings of the patient's face should not be taken in conjunction with colposcopy. • Expert Certificates and other legal reports should make known the existence of these photographic recordings without copies being provided to the recipient. • Recordings can only be taken after informed consent has been 	<p>Provides detailed practical guidelines on the use of photo-documentation.</p>

	obtained from the person having parental responsibility for the child or young person, or the child or young person (if Gillick competent) .	
<p>“Standards for accredited members”</p> <p>National Children’s Alliance</p> <p>2010</p> <p>USA</p>	<p><i>General comments:</i></p> <ul style="list-style-type: none"> • Diagnostic-quality photographic documentation using still and/or video documentation of examination findings is a standard part of the medical evaluation of suspected child abuse. • Photo-documentation enables peer review, continuous quality improvement, & consultation. • It may also obviate the need for a repeat examination of the child. <p><i>Some key components of medical evaluation:</i></p> <ul style="list-style-type: none"> • Medical evaluations need to be provided by health care providers with paediatric and child abuse experience and expertise • Medical provider should be familiar and keep up-to-date with published research studies in the area. • The provider should have a system in place so that consultation with an established expert or experts in sexual abuse medical evaluation is available when a second opinion is needed. • Help ensure the health, safety, and well-being of the child; diagnose, document, and address medical conditions resulting from abuse; assess the child for any developmental, emotional, or behavioural problems needing further evaluation and treatment and make referrals as necessary; and reassure and educate the child and family. • All non-medical staff working in suspected child abuse should be trained about the nature and purpose of a medical evaluation so that they can competently respond to common questions, concerns and misconceptions from children & families. • An emergency evaluation: timing, location, and provider of medical evaluation should be chosen so that a skilled evaluation is conducted, acute injuries and/or other physical findings are documented photographically and in writing and, 	<p>Photo-documentation is standard of care in medical evaluations in most of the USA. Diagnostic-quality photographic documentation need to be taken. Medical providers need to have the expertise and on-going training in child sexual abuse, and if not have systems in place to obtain a second opinion. However its not just the medical staff who need expertise training, other non-medical staff in the child abuse team, need to be able to reassure the child and family of the importance of the medical evaluation.</p>

	when indicated, trace evidence is collected and preserved.	
<p>“Photo-documentation in the Investigation of Child Abuse: Portable Guides to Investigating Child Abuse”</p> <p>U.S. Department of Justice</p> <p>2006</p> <p>USA</p>	<ul style="list-style-type: none"> • To ensure effective photo-documentation, it is important to use the most appropriate camera equipment and film and to properly identify and investigate the child victim • Provides detailed recommendations of which modality of photo-documentation to be used. • Establish a protocol or checklist for photo-documentation. <p><i>Key recommendations for photo-documentation of child sexual abuse:</i></p> <ul style="list-style-type: none"> • A trusted friend or guardian should be present • Inform child beforehand of the procedure, keeping in mind the child’s developmental age. • Important to ensure child is comfortable e.g. plenty of toys, colouring in, make eye contact, no sudden movements. • Let the child undress himself or herself or have the parent or guardian help. 	<p>Provides practical recommendations on modalities of photo-documentation and the photo-documentation procedure with the child, and how to best make the child feel comfortable.</p>

Table 1:

To be submitted as a separate file

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