Sexual assault examination and COVID-19: risk reduction strategies in conducting forensic medical examinations of a suspected or confirmed COVID-19 positive patient in Melbourne hospital hot zones

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Abstract

The rapidly evolving context of the COVID-19 pandemic has necessitated profound modifications to the provision of health care services on a global scale. The concomitant requirements of lockdowns and social isolation has had marked ramifications for vulnerable individuals at risk of violence. This ripple effect of the pandemic has been observed globally. It is crucial that clinical forensic medical units continue to provide quality and timely essential services to those affected by interpersonal violence. As such, processes in this field must be modified as COVID-19 cases present and knowledge about the disease changes. The experiences of conducting sexual assault forensic examinations of suspected and confirmed COVID-19 positive (S/COVID-19) patients in a hospital hot zone are presented, and additional forensic issues specific to the emerging COVID-19 context are discussed.

Keywords S/COVID-19 · Sexual assault · Interpersonal violence · Forensic medicine · Forensic medical examination · Hot zone

Clinical forensic services and the COVID-19 response

In Australia, the structure of clinical forensic medical services varies depending on local jurisdiction. In Victoria, state-wide adult forensic medical services are conducted by the Department of Clinical Forensic Medicine at the Victorian Institute of Forensic Medicine, operating under the Department of Justice and Community Safety. Police refer acute forensic medical cases (physical assault, sexual assault and fitness for interview) to the on-call clinical forensic practitioner (CFPs). CFPs conduct sexual assault examinations in metropolitan and regional areas of Victoria in designated hospital crisis care units and multidisciplinary centers (MDC) and, when the need arises, in emergency departments, intensive care units, psychiatric inpatient facilities, and nursing homes.

In Melbourne, a small team of CFPs conduct forensic medical examinations at five geographically spread hospital-based crisis care units (all closely associated with their emergency departments) and at a multi-disciplinary centre in the south-eastern suburbs. Examinations are conducted in collaboration with Centre Against Sexual Assault (CASA) advocates, who provide support to patients during the forensic examination, as well as counselling and aftercare. As a consequence, there is considerable CFP movement between the six Melbourne forensic medical examination sites.

CFP movement is further complicated by frequent travel between police stations to examine alleged perpetrators and complainants of physical assault, warranting forensic medical examinations, photography, and/or biological sample collection. CFPs are also routinely requested to attend hospital emergency departments, inpatient wards or intensive care units to examine patients with injuries.

In the early stages of the COVID-19 pandemic, initiatives were introduced by the clinical team to decrease the number of sites attended by CFPs for sexual assault examinations to just three geographically suitable locations (two hospitals and the multi-disciplinary centre). The aim of the site

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reduction was to minimize the potential spread of COVID-19 to hospital sites due to CFP movement. It also enabled the clinical team to focus their attention on the rapidly evolving local protocols of a smaller number of examination sites as emergency departments restructured to create designated COVID-19 zones.

COVID-19 and experiences of violence: The ripple effect

Globally, concerns have been raised about the compounding effects of the pandemic, on those vulnerable to violence, specifically women and children, who are living in lockdown conditions [1]; UN Women have described this phenomenon as a ‘shadow pandemic’ [2]. There are fears regarding the ability of complainants to report violence as they isolate within their homes, often in the presence of the perpetrator [3]. A recent Australian Institute of Criminology online survey of 15,000 Australian women suggests the initial phase of the COVID-19 pandemic coincided with the onset of domestic violence for many women. In one third of respondents who reported experiencing physical or sexual violence during that time, it was the first time their partner had ever been violent towards them [4].

As the COVID-19 situation varies between jurisdictions and evolves rapidly depending on case numbers and government restrictions, it is not possible to predict the sustained effect on forensic medical examination caseload. On the 16th of March 2020, a state of emergency was declared in Victoria [5]. At this time, returned overseas travelers represented the majority of COVID-19 cases and mandatory quarantine measures were introduced. Australia closed its borders to non-citizens on the 20th of March 2020. Further restrictions were imposed and by the 31st of March 2020 there was a downward trend in new COVID-19 case numbers. At this time, returned overseas travelers represented 58.5% (536 cases) of the total 917 Victorian confirmed COVID-19 cases [6]. During this phase our unit experienced an initial decrease in acute sexual assault case referrals. As time progressed and restrictions were lifted, the forensic medical examination caseload began to increase.

Following the lifting of restrictions in Victoria, by late June the number of community-acquired COVID-19 cases escalated, and of the 8700 new cases between July 1 and August 1, only 21 were acquired in returned overseas travelers [6]. Stage 3 restrictions were re-introduced in metropolitan Melbourne and one of the regional shires in early July 2020, and interstate borders were closed to Victoria [7]. By the beginning of August, Stage 4 restrictions were implemented, including stay at home orders and curfew [6].

The climb in COVID-19 case numbers in Melbourne necessitated the development of protocols by the clinical

team in anticipation of examining patients suspected or confirmed of being infected with COVID-19 (S/COVID-19 patients) in hospital hot zones.

A sexual assault examination of a S/COVID-19 patient, in a COVID-19 designated ‘hot zone’

Our unit has been involved in the clinical forensic medical examination of S/COVID-19 patients in Victoria. As an example of the processes employed in examining such patients, we present the following de-identified case.

A patient who was sexually assaulted in July 2020 was referred to our service. This individual had injuries which required medical assessment prior to forensic examination so they were taken to a hospital emergency department. The alleged incident occurred during the COVID-19 pandemic, with local escalating rates of community transmission. The patient had symptoms and signs of a respiratory illness, including hoarse voice and cough, and upon testing, was found to be COVID-19 positive. The patient was admitted to a designated COVID-19 ward (‘hot zone’). Due to the patient’s symptoms and COVID-19 positive status, it was determined that the forensic medical examination would take place within the hot zone.

Given the unfamiliar environment and extra infection control precautions that the examination would require, a dual practitioner approach was employed. The aim of this approach was primarily to significantly reduce the time spent by any one practitioner in a COVID-19 environment, as well as to have a ‘spotter’ through the donning, examination and doffing processes in the event that hospital staff were not available. The concept of a dual practitioner approach may not be practicable for all clinical forensic units, as staffing availability considerations would need to be taken into account. This approach could be tailored in accordance with staffing numbers and practitioner level of experience, and availability of hospital staff to assist with donning and doffing procedures.

We obtained a history of the claim from the patient over the phone with the assistance of an emergency department social worker. Our established protocol required that the forensic sampling equipment was prepared in a nearby ‘cold zone’, adhering to DNA contamination minimization principles. We attended the hot zone donning/doffing station, where we donned the provided PPE (personal protective equipment – gown, N95 mask, goggles/face shield, gloves) and entered the hot zone to examine the patient and collect forensic samples. We then proceeded to conduct a modified procedure of packaging, sealing and labelling the specimens to enable them to be safely collected and removed from the hot zone.

We preserved the chain of custody of the forensic samples and the handover occurred in an outdoor isolated area of the

hospital carpark to prevent unnecessary police presence in the hospital. The samples were then conveyed by Victoria Police Sexual Offences and Child Abuse Investigation Team (SOCIT) members to the Victoria Police Forensic Services Centre for DNA analysis.

Discussion

Even in a COVID-19 hot zone, the principles of DNA contamination minimization are paramount in order to prevent inadvertent transfer of DNA material. The standard sexual assault examination principles, in which sources of DNA contamination are minimized from the examiner, examination surfaces, and other people in the room, should be adhered to at each step. Similarly, measures ordinarily taken to maintain the integrity of chain of custody must also be followed (Fig. 1).

The significant risk of transmission of COVID-19 within the community posed Melbourne-based CFPs with a unique and challenging scenario—forensic medical examinations of S/COVID-19 patients. A sexual assault examination in a designated COVID-19 hot zone represents a precarious balance between a number of concurrent priorities:

- The need to address patient well-being in an unfamiliar and potentially dehumanizing environment following an incident of inter-personal violence. Staff are dressed in full PPE and patients are unable to be accompanied by support persons. This can add to the physical and emotional trauma they experience.
- The maintenance of forensic sample integrity in an uncontrolled environment, including preventing DNA contamination and maintaining the chain of evidence.
- The minimization of COVID-19 exposure to CFPs.
- The prevention of viral contamination of forensic samples and packaging.
- The diversion of hot zone staff from their ordinary duties to facilitate CFP attendance, at a time where health care resources are strained.
- The planning of post-assault management, including sexually transmitted infection screening, emergency contraception and appropriate medical follow up, despite competing acute medical issues.

The task of safely removing biological samples and other evidentiary items (such as clothing) from a COVID-19 contaminated area was arguably the most important modified aspect of conducting a forensic medical examination in a hot zone. Ordinarily, the forensic medical examination kit,

Fig. 1 COVID-19 sexual assault examination principles

a cardboard box containing samples, would be handed to attending police officers at the conclusion of the examination. Without additional precautions, the kit itself, having been inside the hot zone and in contact with surfaces within the hot zone, could potentially act as a fomite (inanimate object that can become contaminated, facilitating viral transmission to another person). Research examining the stability of SARS-CoV-2 on different surfaces suggests that virus can be detected on some surfaces up to 72 h later [8]. Thus, modifications to normal packaging procedures were imperative, to prevent the forensic samples themselves inadvertently becoming fomites, and presenting a risk to examining practitioners, police and the receiving forensic scientists.

The patient experience during COVID-19: Additional considerations

The experience of the S/COVID-19 patient undertaking a sexual assault examination is unfortunately likely to be markedly different to that provided by the usual best-practice examination conducted within specialized sexual assault units. A designated emergency department COVID-19 hot zone is a foreign and noisy environment. All health care workers will be covered in personal protective equipment including masks and face shields, as well as adhering to physical distancing where possible. All of these measures may be perceived as a dehumanizing experience.

Patients may not have the opportunity to receive face-to-face contact with police and sexual assault counsellor advocates that would normally be provided. They may perceive the request to disclose details of their alleged sexual assault via phone or videoconference as confronting. The patient may have been in isolation prior to, or subsequent to the incident, and may not have the means to seek connection with their usual support networks. In addition, they may be in a shared ward, with limitations to privacy. These challenges may be augmented for patients with additional needs i.e. hearing impairment, psychiatric conditions, cognitive impairment and people who require interpreters.

It is of vital importance that the patient's experience be kept in the forefront of the CFP's mind. In this unique scenario, CFP's must be empathic and strive to establish rapport and an authentic human connection within the limitations of their interactions in a COVID-19 hot zone context. Recognizing these issues, our unit has introduced the use of disposable stickers (10 × 7 cm) with the clinician's name and head shot, to be worn on the outside of the PPE gown.

Establishing locally relevant protocol modifications: A collaborative approach

It is commonplace for a significant time period, many months or even years, to lapse between a claim of sexual

assault, and the case progressing through the criminal justice system. With current jury trials suspended in Melbourne, it is not clear how timeframes of these cases will be affected in the months and years to come. It is imperative that COVID-19 pandemic-related deviations from routine forensic protocols be clearly documented. This is essential for future court proceedings, to ensure forensic evidence obtained in a COVID-19 context is held to accepted quality standards to guarantee admissibility in the criminal justice system.

The authors note that guidelines have been provided by various clinical forensic representative bodies and jurisdictions which reflect these principles [9, 10]. Published guidelines largely provide for a controlled, ideal situation in which a COVID-19 positive patient can attend a designated sexual assault examination suite or is isolated in a private room. Modified protocols currently support telehealth or telephone consultations with the patient prior to physical examination and forensic sample collection in order to minimize practitioner face-to-face time.

Similarly, in the examinations we conducted, one practitioner explained the purpose and process steps of the forensic procedure, obtained verbal consent, and conducted the history over the phone. A phone consult, although practical in terms of reducing practitioner time in the hot-zone and exposure to the virus, limits visual cues and face-to-face development of rapport. This rapport developing step is usually considered fundamental when conducting an intrusive examination on a traumatized patient and this limitation requires acknowledgement and adjustment by the practitioner.

Additional inherent limitations to taking a phone history that have been encountered in such cases include: hot zones are often open ward settings with wall barriers on each side of the patient with only a curtain separating them from busy passageways; constant background noise and activity; poor telephone reception; poor patient speaking volume due to a sore throat and hoarse voice. All of these limitations required contemporaneous documentation. Even if a dedicated forensic sexual assault examination suite is available for use with adequate PPE and environmental precautions in place, the patient may be too unwell to be transported into that setting, or transfer may not be considered feasible or safe in a COVID-19 positive symptomatic patient.

Prior to entering hot zones and conducting forensic medical examinations, it was essential to practice the modified dual practitioner process and anticipate possible variables that may be encountered. It should be expected that in the context of a pandemic, local hospital procedures will be significantly modified, with makeshift wards and rapidly evolving protocols.

Based on our review of processes after conducting a forensic medical examination in a COVID-19 hot zone, we

propose the considerations outlined in Table 1, which can be modified to suit local circumstances:

All forensic examination kits in metropolitan Melbourne and regional Victoria are now identified with brightly colored ‘COVID-19 risk’ stickers, to be clearly displayed on forensic sample collection kits or patient

clothing bags when suspected COVID-19 or positive cases are examined (Fig. 2). This alerts police and forensic sciences staff to the potential risks of handling the evidence and the need for cold storage of the specimens to prevent DNA degradation from being sealed in plastic.

Table 1 Considerations for forensic medical examination in COVID-19 hot zones

1. Establish contact with a hot zone ‘on the ground’ treating staff member (e.g. nurse, doctor, social worker)	<ul style="list-style-type: none"> • Establish the patient’s medical status, and the value/urgency of a forensic medical examination • Obtain information about anticipated examination location • Request assistance with locating a nearby ‘cold zone’ set up area
2. Optimize CFP safety in unfamiliar hot zone environment	<ul style="list-style-type: none"> • Dual practitioner examination • Minimize clinician face-to-face time in the hot zone, by first conducting a history via telehealth • Do not bring personal belongings into the hot zone: only the forensic examination kit (keys, phones in zip-lock plastic bags if necessary) • Don scrubs
3. Preparation of forensic samples in a ‘cold zone’, maintaining forensic principles of minimizing DNA contamination	<ul style="list-style-type: none"> • Prepare and label required samples, on a DNA free surface (e.g. sterile field from forensic examination kit, or bleach-cleaned surface) • Prepare second receptacle (e.g. smaller cardboard box) within larger outer examination kit, to remain relatively protected during the time in the hot zone • Place desiccant sachet into smaller box: this will be the receptacle ultimately removed from the hot zone containing the samples
4. Leave outer packaging outside the doffing station, in a clean zone	<ul style="list-style-type: none"> • Before entering the hot zone, leave an outer plastic bag, security seals and COVID-19 stickers at the doffing station. This bag remains clean and will be used to transport the forensic samples out of the hospital
5. Conducting the examination in the hot zone	<ul style="list-style-type: none"> • Don PPE, and ensure each practitioner is being observed (spotted) to don correctly • Confirm consent for procedure with patient • Conduct general body examination • The primary CFP conducts the ano-genital examination, wearing an additional pair of gloves on top of their PPE gloves. Forensic sampling is conducted, adhering to standard forensic double glove technique to prevent DNA contamination, changing outer gloves at each anatomical site being sampled • The secondary practitioner assists with optimizing lighting, receiving and packaging forensic samples into the inner cardboard box (still contained within the larger outer box)
6. Exiting the hot zone	<ul style="list-style-type: none"> • At the conclusion of the examination, exit the hot zone to the doffing station, where the contaminated larger outer box is discarded, followed by hand hygiene • Doff PPE, and ensure each practitioner is being observed (spotted) to doff correctly • Acknowledging that the small box may have fomite contamination, utilise clean gloves and hand hygiene to handle the small box^a • The small box is sealed with tamper proof seals to maintain evidentiary standards, labelled with COVID-19 risk stickers, and inserted into the clean/clear plastic bag being held open by the second practitioner, followed by hand hygiene
7. Handover of forensic samples to police	<ul style="list-style-type: none"> • Avoid police entering a hospital hot zone solely to receive forensic samples: consider an alternative, discrete handover location (such as the hospital car park) • Complete chain of custody paperwork in the presence of police
8. Healthcare provision	<ul style="list-style-type: none"> • Address the medical needs of the patient in conjunction with the treating doctors, including treatment of injuries, emergency contraception and relevant sexual health follow up • Ensure psychological support has been offered
9. Other considerations	<ul style="list-style-type: none"> • Consider deferring collection of buccal reference swabs until the patient has recovered • If photography of injuries is required, place the camera in a disposable plastic bag, use gloves when handling, and clean camera with disinfectant wipes at doffing station • Consider photography as the basis of injury documentation. If injury documentation on a paper examination proforma is required, consider placing the completed proforma into a separate clean plastic pocket upon exiting, at the doffing station. Hand hygiene should be repeated following handling of the documents (the plastic pocket can be sealed and opened after a cautionary three-day decontamination period to prevent fomite viral transmission on paper/cardboard)

^aThe process for removing forensic specimens from the hot zone may require modifications based on the components of the forensic examination kits in each jurisdiction and the interface between the contaminated and clean surfaces outside the hot zone

Fig. 2 Forensic medical examination kit, including outer cardboard box (which becomes contaminated and is discarded at the doffing station), inner small cardboard box (receptacle for forensic samples, remains protected from surfaces in the hot zone), large clear plastic bag to place smaller box in at the conclusion of the examination, and COVID-19 case stickers. A desiccant sachet, speculum, forensic swabs and tamper proof security seals are also pictured

Forensic practitioner wellbeing

The increased complexity of modifications to usual practice in health care is omnipresent in all areas of patient-facing services in the context of the COVID-19 pandemic. These modifications include additional risk assessment at triage, rapid upskilling in PPE competency, and well-rehearsed modified protocols. The value of practitioner debriefing following examinations in this context is perhaps more crucial than ever. In addition, consideration must be given to a potential reduction in health care staffing levels. For these reasons, our service has restricted COVID-19 positive forensic examinations to day and evening shifts and a formal debrief between clinicians is conducted the following day at a video handover meeting.

Conclusion

Even in the setting of a global pandemic, sexual assault and interpersonal violence are still occurring and are likely to be increasing in the context of a “shadow pandemic”. It is essential that forensic medical services rapidly evolve their standard processes in the context of the COVID-19 pandemic. Extensive planning, communication, and modifications to usual service provisions are required. Principles of optimizing the patient experience, preserving evidentiary standards, minimizing DNA contamination, maintaining clinician safety, and preventing forensic sample fomite transmission are imperative. Forensic medical services should be encouraged to collaborate with other jurisdictions, and share

information regarding evolving protocols, to continue to best serve the community and criminal justice system.

Key points

- 1 Even in the context of the COVID-19 pandemic, it is crucial that forensic medical practitioners continue to provide quality and timely services to those affected by sexual and interpersonal violence.
- 2 It is imperative that forensic medical services modify procedures in order to achieve a balance between the maintenance of the integrity of forensic samples, prevention of viral contamination of specimens, and preservation of practitioner safety.
- 3 A modified protocol for sexual assault examination in a COVID-19 hot zone is presented.

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