NSW Health

Chief Health Officer's guidelines for the *Mandatory Disease Testing Act 2021*

REVISION HISTORY

Version	Approved By	Amendment Notes
1.0 July-2022	Chief Health Officer and Deputy Secretary, Population and Public Health	Initial release

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1. BACKGROUND

1.1. About this document

The *Mandatory Disease Testing Act 2021* (Act) establishes a regime to allow for the mandatory blood testing of a person in circumstances where the person's bodily fluid, through deliberate action, has made contact with certain workers and the worker has been placed at risk of contracting a blood borne virus (BBV).

These guidelines have been developed to assist:

a) senior officers exercising functions under the Act,

b) relevant medical practitioners who may consult with workers for the purposes of section 9 of the Act,

c) persons taking blood from third parties under a mandatory testing order.

These guidelines are only designed for the purposes above. Any worker who is injured at work should seek appropriate medical care, treatment and support, which in the context of a potential BBV exposure may be time critical.

1.2. Key definitions

BBV	Blood borne virus, corresponding to blood borne disease defined in the Dictionary of the Act
BBV infection	Blood borne virus infection, an established infection with HIV, hepatitis B and/or hepatitis C, corresponding to blood borne disease defined in the Dictionary of the Act
Bodily fluids	Blood, faeces, saliva, semen or other bodily fluid or substance prescribed by the regulations
CHO	Chief Health Officer
Exposure event	An event in which the worker has come into contact with the bodily fluids of a third party that requires risk assessment to determine whether there is a risk of the worker becoming infected with a blood borne virus from the third party.
HBIG	Hepatitis B immunoglobin
HBsAg	Hepatitis B surface antigen
HBV	Hepatitis B virus
HCV	Hepatitis C virus
HIV	Human immunodeficiency virus

NATA	National Association of Testing Authorities
PCR	Polymerase chain reaction
PEP	Post-exposure prophylaxis
Percutaneous exposure	An exposure resulting from a needle or other sharp object penetrating the skin e.g. a needlestick injury
PLHIV	Person living with HIV
Relevant medical practitioner	A medical practitioner with qualifications or experience in BBV infection or, if a medical practitioner with qualifications or experience in BBV infection is not available at the time the worker requires a consultation under section 9 of the Act, another medical practitioner as defined in the Dictionary of the Act
Senior officer	Means the senior officer specified for the worker in the Table at the end of the Dictionary of the Act, dependant on the worker's organisation
Susceptible person	An individual who could possibly be infected with a BBV or another pathogen
Third party	A person aged 14 and over from whom the bodily fluids originated (see section 8 of the Act)
Window period	The time after a person has been exposed to a blood borne virus that is the maximum time it may take for a test to give an accurate result
Worker	A worker specified in the Table at the end of the Dictionary of the Act
Vulnerable third party	A third party who: • is at least 14 years of age but under 18 years of age, or • has a mental health impairment or cognitive impairment within the meaning of the Mental Health and Cognitive Impairment Forensic Provisions Act 2020 that significantly affects the vulnerable third party's capacity to consent to voluntarily provide blood.

1.3. Mandatory testing orders

A worker may apply for a mandatory testing order in relation to a third party if:

1. the worker has come into contact with the bodily fluid of the third party, and

2. the third party is aged 14 years or older, and
3. the contact occurred—
    - in the execution of the worker's duty, and
    - as a result of a deliberate action of the third party, and
    - without the consent of the worker

Before an application is made, the worker must consult with a relevant medical practitioner who has provided the worker with information about risks of contracting and transmitting a BBV, the way to minimise those risks and the extent to which testing the third party will assist in assessing the risk to the worker of contracting a BBV.

The senior officer will assess the application and decide whether to make a mandatory testing order or not. If the third party does not appear to be a vulnerable third party, the senior officer must seek the third party's consent to voluntarily provide blood to be tested for BBV infection, and provide the third party with an opportunity to make submissions and consider the submissions received. The senior officer can either decide to make a mandatory testing order or refuse the application.

If the third party appears to be a vulnerable third party, the senior officer can refuse the application, or decide to apply to the Court for a mandatory testing order. The senior officer must provide the vulnerable third party and the third party's parent or guardian, if any, with an opportunity to make a submission and consider the submissions received.

In determining any application, the senior officer is to consider these guidelines and other matters considered relevant, including a report made in relation to the exposure event. The senior officer may make a mandatory testing order for a third party only if satisfied that the third party will not voluntarily provide blood to be tested for BBVs, and that testing the third party's blood for BBVs is justified in all the circumstances.

If a mandatory testing order is made, the third party must comply with the order and present at the specified place to be tested for BBVs. The third party may appeal the decision by making an application in writing to the CHO, but they must still comply while the order is under review. Failure to comply with the mandatory testing order is an offence.

The test results will be provided to the medical practitioner authorised by the worker to receive the results on the worker's behalf and the medical practitioner authorised by the third party to receive the result on the third party's behalf (or if no medical practitioner has been authorised by the third party, the Chief Health Officer).

2. RELEVANT MEDICAL PRACTITIONERS

A worker who proposes to apply for a mandatory testing order must, as soon as reasonably practicable and within 24 hours after the contact with bodily fluids, consult with a relevant medical practitioner. This consultation can occur up to 72 hours after the contact if reasonable in circumstances.

It is recommended that a relevant medical practitioner, who is consulted for the purposes of the Act, is a medical practitioner with expertise in assessing and managing BBV risk exposures, such as a medical practitioner who is an S100 qualified prescriber [1], a sexual health medical practitioner or infectious diseases medical practitioner.

If the relevant medical practitioner does not have qualifications or experience in the diagnosis, management and treatment of BBVs, the relevant medical practitioner should seek advice from an appropriately qualified practitioner.

2.1. Consultation with the worker

The relevant medical practitioner performing a post-exposure consultation is required to inform the worker of the following:

1. The risk to the worker of contracting a BBV from the third party as a result of the contact
2. The appropriate actions to be taken by the worker to mitigate the risks of contracting a BBV from the third party as a result of the contact, and transmitting a contracted BBV to another person
3. The extent to which testing third party's blood for BBVs may assist in assessing the risk of the worker contracting a BBV

It is recommended that medical practitioners provide the advice above in writing.

If the relevant medical practitioner provides written advice from this consultation, it must be provided as part of an application for a mandatory testing order. If written advice is not provided and an application for a mandatory testing order is made, then the senior officer making a determination may contact the medical practitioner who performed the consult and obtain the worker's medical records that relate to the relevant consultation.

In general, relevant medical practitioners should follow advice outlined in the Australian National guidelines for post-exposure prophylaxis after non-occupational and occupational exposure to HIV.

It is recommended that relevant medical practitioners also advise that workers should remain in the care of a relevant medical practitioner if intending to make an application for a mandatory testing order and that this relevant medical practitioner is the one authorised to receive the results of any BBV tests if a mandatory testing order is made. This will assist in ensuring accurate interpretation and communication of results to the worker and facilitate their ongoing management if required.

3. SENIOR OFFICERS

3.1. Does the exposure meet the criteria for an order

A worker can only make an application for a mandatory disease testing order if the contact occurred:

- in the execution of the worker's duty, and
- as a result of a deliberate action of the third party, and
- without the consent of the worker.

3.2. Determination of mandatory testing order applications

3.2.1. Where a third party appears to be a vulnerable third party

In determining an application for a mandatory testing order, if it appears to the senior officer on the information available that a third party is a vulnerable third party, the senior officer can decide to apply to the Court for a mandatory testing order or refuse the application.

A vulnerable third party means a third party who is at least 14 years of age but under 18 years of age, or a third party who has a mental health impairment or cognitive impairment within the meaning of the *Mental Health and Cognitive Impairment Forensic Provisions Act 2020*, that significantly affects the vulnerable third party's capacity to consent to voluntarily provide blood to be tested for BBV infection.

3.2.2. Determining an application for a mandatory testing order on a vulnerable third party

Where it appears to the senior officer on the information available that the third party is a vulnerable third party, before determining an application, the senior officer must provide the vulnerable third party, and their parent or guardian, if any, with an opportunity to make submissions, and consider the submissions received.

An application for a mandatory testing order must be determined within 3 business days of receiving an application unless a longer period is necessary in the circumstances.

In determining the application, the senior officer:

- should consider the report (or advice) of the relevant medical practitioner who performed the consultation for the worker
- is to consider the information in these guidelines (particularly Sections 3.3 and 6)
- is to consider other matters the senior officer deems relevant, including a report made in relation to the incident during which the contact occurred

After considering this information, and any submissions received, if the senior officer is satisfied that testing the vulnerable third party's blood is justified in all circumstances, they can make an application to the Court for a mandatory testing order. Otherwise, the senior officer must refuse the application.

As soon as practicable after determining an application, the senior officer must give written notice of the determination and reasons for the determination to:

- the worker
- the vulnerable third party and their parent or guardian, if any
- the Ombudsman – MDT@ombo.nsw.gov.au

It is recommended that senior officers clearly record all factors considered when making a determination and include reference to all reports and advice used when giving written notice of the determination.

If the senior officer decides to make an application to the Court for a mandatory testing order, they must also notify the Chief Health Officer.

The senior officer should send this notification to NSWH-MDT@health.nsw.gov.au.

3.2.3. Determining an application for a mandatory testing order on a third party

Before determining an application, the senior officer must seek the third party's consent to voluntarily provide blood to be tested for BBV infection. It is recommended that consent is sought in writing and if consent is not provided, the reasons for the decision of the third party not to consent are also recorded. The reasons a third party does not consent to provide blood should be considered when making a determination for a mandatory testing order (Section 3.3.3).

The senior officer must also provide the third party with an opportunity to make submissions before making a determination, and consider the submissions received.

An application for a mandatory testing order must be determined within 3 business days of receiving an application unless a longer period is necessary in the circumstances.

In determining the application, the senior officer:

- should consider the report (or advice) of the relevant medical practitioner who performed the consultation for the worker
- is to consider the information in these guidelines (particularly Sections 3.3 and 6)
- is to consider other matters the senior officer deems relevant, including a report made in relation to the incident during which the contact occurred

After considering this information, and any submissions received, if the senior officer is satisfied that the third party will not voluntarily provide blood to be tested for BBV infection and testing the third party's blood is justified in all circumstances, they can make a mandatory testing order. Otherwise, the senior officer must refuse the application.

If the third party cannot be found after making reasonable enquiries, or if the senior officer considers it appropriate in the circumstances, an application for a mandatory testing order can be refused.

As soon as practicable once a determination is made, the senior officer must give written notice of the determination and reasons for the determination to:

- the worker
- the third party
- the Ombudsman – MDT@ombo.nsw.gov.au

It is recommended that senior officers clearly record all factors considered when making a determination and include reference to all reports and advice used when giving written notice of the determination.

3.3. Factors for a senior officer to consider in assessing a mandatory testing order application

The senior officer should assess all material provided to them by the worker and third party and consider all relevant information, including the factors below.

3.3.1. The relevant medical practitioner's report

Consider the report (or advice) of the relevant medical practitioner before deciding whether to apply to the court for a mandatory testing order for a vulnerable third party, to make a mandatory testing order or refuse the application for a mandatory testing order.

3.3.2. The level of BBV transmission risk

Consider the risk of BBV transmission to the worker. This may include consideration of the type of exposure, the type of bodily fluid involved and an understanding of the effect on the post-exposure management of the worker. Much of this information will be included in the relevant medical practitioners' assessment, but information to assist the senior officer to contextualise the advice of the relevant medical practitioner is provided here and Section 6.

Transmission from a *known* infected person varies depending on the type of exposure, the type of virus, the amount of virus transmitted and the immune status of the exposed person (Table 1). Injuries listed as "moderate to very high risk" in Table 1 involve blood or fluids that are visibly contaminated with blood. Other bodily fluids generally do not pose a risk on their own (with the exception of semen).

While there is the potential that other BBVs such as hepatitis B and hepatitis C may be spread following a human bite, these occurrences have rarely been documented. No HIV transmission through biting or spitting has ever been reported in Australia. Recent medical consensus statements from medical practitioners with expertise in managing HIV have concluded that [2, 3]:

- There is no risk of HIV transmission via contact with the saliva of a person living with HIV (PLHIV), including through kissing, biting, or spitting
- There is no risk of HIV transmission from biting or spitting where the saliva of a PLHIV contains no, or a small quantity of, blood
- There is no to very low risk of HIV transmission from biting where the saliva of a PLHIV contains a significant quantity of blood, and the blood comes into contact with a mucous membrane or broken skin, and the viral load is not low or undetectable

Reports of BBV acquisition following an incidental needlestick injury outside a healthcare setting are rare [4-7].

Table 1: Estimated risk of BBV transmission from **a known infectious** third party (adapted from [8])

TYPE OF EXPOSURE	THIRD PARTY STATUS		
	HBV +[1]	**HCV +**	**HIV +[2]**
Blood to intact skin and skin-to-skin contact	None	None	None
Spitting	None	None	None
Biting	None	None	None
Faecal contact with intact skin, broken skin, mouth or eyes	None	None	None
Blood contact with broken skin, mouth or eyes e.g.: • Punch from bleeding person to body causing break in skin • Large blood splash e.g. bleeding artery • Blood contact to mouth from giving mouth-to-mouth resuscitation if no protective equipment used	Moderate	Low	Low <0.1%
Needlestick injury and other penetrating injuries e.g.: • Cut by a blade which recently cut another person • Needle-stick injury from recently used needle	Very high 6%-30%	High 1.8%-3%	Moderate 0.2%
Sexual exposure (no condom used):			
• Oral	Low	None	Very low
• Vaginal (insertive)	High	Very low	Low 0.04%
• Vaginal (receptive)	High	Very low	Low 0.08%
• Anal (insertive)	High	Very low	Moderate 0.1%-0.6%
• Anal (receptive)	High	Low	High 0.6%-1.4%

[1]*Hepatitis B third party status is not relevant if worker is fully vaccinated and immune.*

[2]*HIV third party status may not be relevant when third party is on antiretroviral treatment and viral load is suppressed.*
Note – For very low risk, the risk is too low to estimate. For exposures with no risk, there has never been a recorded human transmission via that exposure.

Generally, injuries to the worker that break their skin or where the eyes or mouth have come into contact with blood or visibly bloody bodily fluid would be classified as moderate (0.1%-1% chance of transmission) to very high risk (10%-30% chance of transmission) of BBV transmission, when assuming the third party is infectious (Table 1). These exposures would generally warrant consideration for PEP for hepatitis B and/or HIV by a medical practitioner. Some scenarios are listed below:

- a needlestick or sharps (stabbing) injury where the workers skin is punctured or broken
- any sexual exposure with contact to bodily fluids
- bloody saliva spit into the eye of a worker
- a punch from the bloodied fist of a third party that breaks the workers skin, or lands on the eye or mouth

- a bite from a third party that breaks the workers skin, where there is visible blood in the mouth of the third party

Scenarios with no, very low or low (<0.1%) BBV transmission risk and where PEP is unlikely to be recommended by a relevant medical practitioner include:

- where a third party spits bloody saliva onto the arm of a worker
- where a third party throws faeces onto the face of a worker
- a punch from the bloodied fist of a third party that impacted an area covered in clothing
- a cut from a sterile, unused scalpel
- a bite from a third party that marked the workers skin but does not break or cut it

The BBV status (either positive or negative) of the third party will generally have no effect on the clinical management of the worker in scenarios with no, very low or low BBV transmission risk.

The vaccine against hepatitis B is highly protective (>95%) against all potential exposures to hepatitis B. If the worker has a documented protective response after completion of the vaccination course, they are considered immune to hepatitis B regardless of the exposure [9].

3.3.3. Reasons why the third party has not consented to provide blood

Consider why the third party has refused to provide blood. This may be for personal or religious or other reasons and granting an order may cause distress to the third party.

3.3.4. Psychological impact to the worker

The effect of a mandatory testing order on the wellbeing of the worker should be a consideration for the senior officer when assessing an application. A lack of knowledge about the third party's BBV status may create anxiety for the worker and may impact on the decisions a worker makes in relation to their day-to-day life, so they may request a mandatory testing order for this reason. This may be the case even if there is no, very low or low BBV transmission risk but may be more likely in high risk exposure situations.

However, senior officers should also be aware that a third party's test result indicating the presence of one or more BBVs may create stress and anxiety to the worker even when there is no, very low or low risk of BBV transmission. Furthermore, a worker learning of a negative result from a third party for BBVs may be given a false sense of security because the third party may be in the window period of the test(s) and may actually have a BBV unknown to them.

4. APPLICATION FOR CHIEF HEALTH OFFICER REVIEW

The CHO can review a decision of a senior officer to make or not make a mandatory testing order. A review can be sought by:

- a third party if the senior officer decides to make a mandatory testing order,
- the worker if the senior officer decides to refuse to make a mandatory testing order.

The CHO must determine an application for review within 3 business days of receiving the application by either affirming or setting aside the decision. If the Chief Health Officer sets aside

a decision by a senior officer to refuse an application for a mandatory testing order, the Chief Health Officer may:

- for a third party who appears to the CHO to be a vulnerable third party, decide to apply to the Court for a mandatory testing order for the vulnerable third party, or
- for a third party who does not appear to the CHO to be a vulnerable third party, make a mandatory testing order.

In determining a review of a senior officer's decision, the CHO may require the senior officer to provide relevant material, including the material the senior officer relied on to make the decision. Before making a decision, the CHO will also seek relevant submissions from parties involved or in the case of a vulnerable third party, their parent or guardian.

As soon as practicable after determining a review, the CHO must give written notice of the determination and the reasons for the determination to the following:

- the worker
- the third party
- if the third party is a vulnerable third party, the third party's parent or guardian, if any
- the senior officer
- the Ombudsman

4.1. Application for review by worker

A worker may apply to the CHO for a review of a senior officer's decision to refuse an application for a mandatory testing order.

Application for CHO review must be made in writing within 1 business day of notification of the decision to refuse an application for a mandatory testing order.

The application must contain:

- a copy of the of the original application for a mandatory testing order
- a copy of the senior officer's decision to refuse the application and the reasons for the decision
- the BBVs for which the blood is to be tested

The worker should complete and sign the 'Application for review by Chief Health Officer – worker' form as part of the application.

The application for review and any additional information should be sent to NSWH-MDT@health.nsw.gov.au

4.2. Application for review by third party

Once notified that a mandatory testing order has been made, a third party can apply for the CHO to review this determination.

Application for CHO review must be made in writing within 1 business day of notification of the decision to make a mandatory testing order.

The application must contain:

- a copy of the of the mandatory testing order
- a copy of the senior officer's decision to make a mandatory testing order and the reasons for the decision
- a copy of submissions (if any) made to the senior officer before the decision to make a mandatory testing order was made
- the BBVs for which the blood is to be tested

The third party should complete and sign the 'Application for review by Chief Health Officer – third party' form as part of the application.

The application for review and any additional information should be sent to NSWH-MDT@health.nsw.gov.au

While under CHO review, a mandatory testing order is still in effect. The third party must comply with the order. **The results of a blood test cannot be given to the medical practitioner authorised by the worker, the medical practitioner authorised by the third party, or the CHO while under CHO review**.

The Act does not affect notification obligations under the *Public Health Act 2010*. Under the *Public Health Act 2010*, medical practitioners and pathology laboratories are required to notify the Secretary of the Ministry of Health if they reasonably suspect a person has hepatitis B, hepatitis C or HIV. Such notification must not include the person's full name or address for HIV.

5. PERSONS TAKING BLOOD FROM THIRD PARTIES

5.1. Staff approved to take blood

Only someone of a class approved by the Health Secretary is authorised draw blood from a third party for the purpose of a mandatory testing order. Nurses, medical practitioners, and persons who take blood in the ordinary course of their employment, including phlebotomists, are authorised to draw blood from a third party for the purpose of a mandatory testing order.

5.2. Taking blood in accordance with a mandatory testing order

The third party must attend the place specified in the order as soon as practicable but no later than two business days after being served with a mandatory testing order. The third party must then provide their blood to be tested for the BBVs specified in the order. Hepatitis B, hepatitis C and HIV will be tested for unless the senior officer specifies in the mandatory testing order that only a subset of these BBVs are to be tested.

A person taking blood from a third party under a mandatory testing order must:

1. Be presented with a copy of the order relating to the third party before taking the third party's blood
2. Take blood in a manner consistent with relevant medical and other professional standards
3. Not use force against the third party to take the blood, other than force ordinarily required to take blood from a person

If the third party has been detained, a law enforcement officer may:

- transport a detained third party to and from a place at which the detained third party's blood will be taken under a mandatory testing order
- assist a person to take blood from a detained third party under a mandatory testing order
- use reasonable force to exercise the functions above and to prevent loss, destruction or contamination of the blood sample taken from the detained third party.

A mandatory testing order does not provide authority or authorisation to compel the authorised person to draw the blood of the third party, though it does authorise for the blood to be taken without the consent of the third party and compels the third party to provide blood for testing. Local protocols for best practice in relation to taking blood should be followed to ensure the safety of health staff and health staff should not draw blood in situations that would put them at risk of harm.

Blood taken under a mandatory testing order must only be tested for the BBVs specified in the order. The testing can only occur in a pathology laboratory accredited by the National Association of Testing Authorities to perform diagnostic testing of notifiable and/or scheduled medical conditions as defined by the *Public Health Act 2010*.

The pathology laboratory testing blood collected under a mandatory testing order may destroy the sample as soon as it is no longer required for the purposes of the Act.

5.3. Notification of results

The pathology laboratory at which the testing of a third party's blood under a mandatory testing order was carried out must, as soon as reasonably practicable, provide the blood test results to:

1. The medical practitioner authorised by the worker to receive the blood test results on the worker's behalf
2. The medical practitioner authorised by the third party to receive the blood test results on the third party's behalf, if any
3. The CHO, if the third party does not authorise a medical practitioner.

If communicating results to the CHO, laboratories should send the results by email to NSWH-MDT@health.nsw.gov.au

A mandatory testing order does not authorise prioritisation or 'fast-tracking' of testing blood samples collected under an order. There is no need for laboratories to alter their local processes or testing workflows to accommodate testing of these samples.

As described in Section 4, if a mandatory testing order is under review by the CHO, the results must not be communicated to the medical practitioner authorised by the worker, the medical practitioner authorised by the third party or the CHO.

6. INFORMATION ABOUT BLOOD BORNE VIRUSES

BBVs are transmitted by blood or other specific bodily fluids that may contain the virus when they enter the body of a susceptible person. Incidental social interactions do NOT transmit BBVs and not all bodily fluids can transmit a BBV. A summary of basic information about BBVs is presented in Table 2.

Table 2: Information about hepatitis B, hepatitis C and HIV

	Hepatitis B	Hepatitis C	HIV
Prevalence	In 2019, an estimated 77,000 people were living with hepatitis B in NSW (about 0.9% of the population) [10].	In 2018, 48,381 people were estimated to be living with hepatitis C in NSW (about 0.6% of the population) [11].	At the end of 2020, an estimated 29,090 people in Australia were living with HIV infection (about 0.1% of the population) [12].
Vaccination	Vaccine available	No vaccine	No vaccine
Immunity	95% of adults infected clear the virus and become immune for life.	25% of adults infected clear the virus and can no longer pass on the infection	Infection is lifelong and cannot be cleared.
Window Period[1]	30–60 days	2 weeks – 6 months	3 months
Treatment	Most people will not need treatment. Antiviral treatment is available for chronic hepatitis B if required, to suppress the virus and prevent liver damage. This treatment rarely cures hepatitis B, but it does reduce levels of virus in the blood and prevents transmission.	Antiviral treatments for hepatitis C consist of an oral regimen of tablets that takes 8–12 weeks. This treatment cures hepatitis C, preventing liver damage and eliminating the risk of transmission.	Antiretroviral treatment for HIV stops the virus replicating, reducing or preventing damage to the immune system and preventing the progression to AIDS. While this does not cure HIV infection, most people diagnosed with HIV now live long and healthy lives. People on HIV therapy cannot pass on the infection

[1]The time after a person has been exposed to a BBV that is the maximum time it may take for a test to give an accurate result.

6.1. Hepatitis B

The adult prevalence of hepatitis B in Australia is currently 1%, with people born overseas and Aboriginal and Torres Strait Islander people representing three quarters of those affected [13, 14]. In Australian prisoner populations, the prevalence is higher, with 3% of prison entrants having evidence of past or current infection[15]. In NSW, the hepatitis B notification rate has been steadily declining in recent years, with an 11% decrease in 2019 compared to the previous year (27 notifications per 100,000 population in 2019)[16].

Most adults that are infected with hepatitis B recover from and clear the infection, providing them with lifelong immunity. This also means that they are not infectious but some blood tests will indicate previous infection. Around 5-10% of adults develop chronic infection, and their treatment is supported by antiviral therapy and regular monitoring of their liver function. The window period for hepatitis B ranges from **30–60 days**, with hepatitis B surface antigen usually being detected within 4–6 weeks of exposure.

Hepatitis B virus is transmitted from one person to another through activities that involve infected blood or body fluids entering the body percutaneously or through mucosal contact, including:

- Sharing drug injection equipment among people who inject drugs
- Mother to child transmission during birth
- Vaginal and anal sex with an infected person
- Mucosal contact (eg splashes of body substances to mouth, nose, eye or non-intact skin)
- Blood from an infected person coming into direct contact with an open wound of another person.
- Unregulated tattoos and body piercing (using unsterile equipment)
- Indirect transfer through sharing sharp items (glucose monitors, razors, nail clippers)
- Transfusion with infected blood or blood products or transplantation of infected material (no longer an issue in Australia).

The risk of infection best correlates with viral load (hepatitis B virus DNA). The presence of hepatitis B e-antigen (HBeAg) is a surrogate marker for high viral load.

There is no risk of hepatitis B transmission if a person's intact skin is exposed to infected bodily fluids such as saliva or blood. Transmission of HBV from saliva contacting the mouth or eyes, or a bite that breaks the skin, have rarely been reported in the literature. Exposure to infected blood through broken skin, the mouth or eyes poses a moderate (0.1% to 1%) risk of HBV transmission. The highest risk of HBV transmission is limited to needlestick or blade injuries in which infected blood is present, and the skin is punctured.

6.2. Hepatitis C

The adult prevalence of HCV in Australia is 1% and in NSW 48,381 people were estimated to be living with hepatitis C by the end of 2018 [11, 17]. In Australian prisoner populations, the prevalence is much higher, with up to 22% of prison entrants having evidence of past or current infection [15]. About 75% of people infected with hepatitis C develop chronic (long-lasting) infection without the intervention of medical treatment. Antiviral treatments consisting of an oral regimen for 8–12 weeks will cure HCV also meaning that the person can no longer transmit the virus to others. About 25% of people infected with hepatitis C virus recover or 'clear' the infection without specific treatment. They cannot pass on HCV once it is cleared, however they remain susceptible to re-infection. The window period for hepatitis C infection before detection of antibodies averages **8 to 11 weeks**, with a reported range of 2 weeks to 6 months. Hepatitis C RNA is usually detected 2 weeks after exposure. In immunocompromised people window periods could last longer.

Hepatitis C is transmitted from one person to another when infected blood enters the blood stream of another uninfected person. This primarily occurs through the following ways:

- Sharing drug injection equipment
- Unregulated tattoos and body piercing (using unsterile equipment)

- Transfusion of infected blood or blood products or transplantation of infected material (no longer an issue in Australia)
- Blood from an infected person coming into direct contact with an open wound of another person.

Rarely, hepatitis C may also be transmitted:

- From mother to child during pregnancy or childbirth; or
- During sex without a condom, particularly in people with HIV co-infection.

The average incidence of hepatitis C virus seroconversion after accidental percutaneous exposure from a hepatitis C-positive source is estimated at approximately 1.8%. The risk of transmission increases significantly if the source has a high viral load.

6.3. HIV

The overall adult prevalence of HIV in Australia is very low at 0.14% [12] and also low among Australian prison entrants (0.4%) [15]. Importantly over 95% of people living with HIV in NSW are on treatment and over 92% of these people have an undetectable level of virus in their blood, which means that they cannot pass on the virus. The window period before HIV is reliably detected is 3 months but can be between 6-12 weeks, depending on tests used.

People living with HIV who are currently on antiretroviral therapy (ART) and have an undetectable viral load have no risk of transmitting the virus to an HIV-negative partner during sex [18].

HIV is transmitted from person to person through infected blood or bodily fluids entering the body percutaneously or via mucosal contact. HIV can be found in the blood, semen, vaginal fluid or breast milk of an infected person and can be transmitted [19, 20]:

- During unprotected (ie without a condom or PrEP) anal or vaginal sex
- By sharing drug injecting equipment (contaminated needles, syringes and other injecting equipment and drug solutions)
- By unsafe injections, tattoos or other procedures with unsterile cutting or piercing
- To a baby during pregnancy, childbirth, or breast-feeding

The average risk of HIV transmission (without prophylaxis) after a percutaneous exposure to HIV-infected blood with detectable viral load has been estimated to be about 0.2%. The risk of transmission following mucous membrane exposure is estimated to be about 0.09% and the risk following non-intact skin exposure is estimated to be even lower [21].

7. REFERENCES

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