

# Guideline

## Community needle stick injury

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### Purpose

This guideline provides best practice recommendations for the immediate assessment, management and follow-up of children who have sustained a community acquired needle stick injury. This guideline was developed in consultation with experienced Paediatric Infection Specialists.

### Scope

This guideline provides information for all Children's Health Queensland (CHQ) employees (permanent, temporary and casual) and all organisations and individuals acting as its agents (including Visiting Medical Officers and other partners, contractors, consultants and volunteers) caring for paediatric patients.

### Related documents

#### Procedures, Guidelines, Protocols

- [CHQ-GDL-65664 Paediatric Guideline: Post-Exposure Prophylaxis for HIV](#)
- [Queensland Health – Clinical Information about HIV and AIDS. Post-exposure prophylaxis \(PEP\) after non-occupational exposure to HIV](#)
- [CHQ-GDL-01023 Tetanus Prophylaxis in Wound Management](#)
- [CHQ-PROC-01036 Antimicrobial: Prescribing and Management](#)
- [CHQ Antimicrobial restrictions](#)

## Guideline

### Management of community needle stick injury (CNSI):

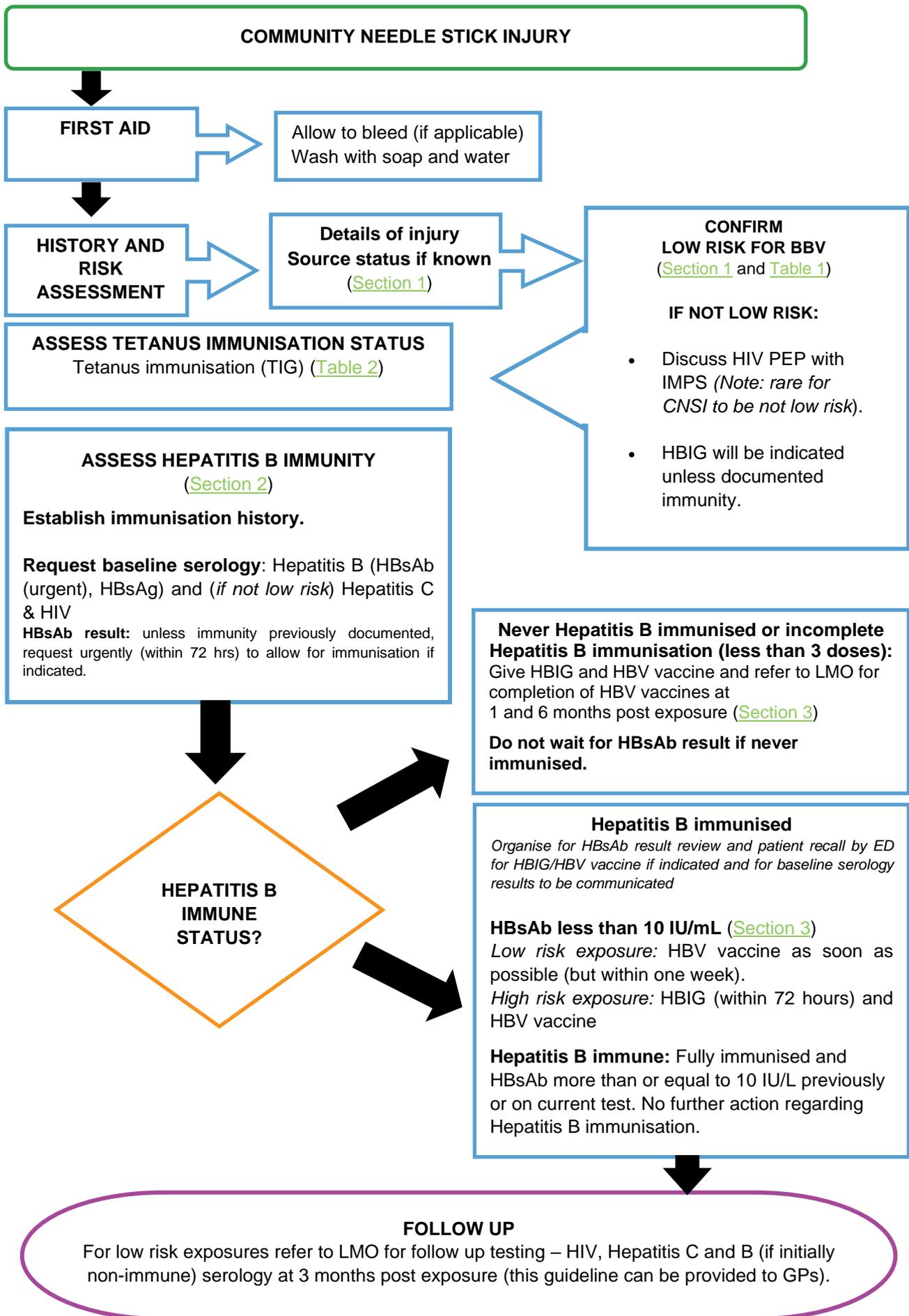
Presentations of children to Emergency Departments (ED) following accidental needle stick injury are not uncommon and such injuries may be a significant source of anxiety. It is important to note that CNSI in the common scenario of accidental exposure to needles found in parks etc. **are of very low risk of blood borne virus (BBV) transmission**, with cases of BBV transmission by such CNSI not being documented in Australia.

Key aspects of the management of CNSI are:

- First aid
- Assessing injury
- Confirming low BBV transmission risk (most CNSI)
- Assessing and managing Tetanus and Hepatitis B immunity status
- Organising follow up serology and reassurance
- HIV post-exposure prophylaxis (PEP) is only a consideration in exceptional circumstances with higher risk exposures.

Recommendations are contained in the flow chart and notes below. The Infection Management and Prevention Service (IMPS) are available for advice on the management of a child with CNSI, the (unlikely) need for PEP and to discuss follow-up (contact via Queensland Children's Hospital (QCH) Switchboard).

PEP, if required, should be prescribed as soon as possible after the exposure and within 72 hours. A separate and linked guideline provides information on HIV PEP, which may be recommended in discussion with IMPS in very high risk non-occupational BBV exposures.



## Section 1. Assessment of CNSI

### Details of injury (CNSI)

<i>Mechanism:</i>	e.g. accidentally picking up needle, stepping on needle, stuck by another person, unwitnessed injury and child too young to tell.
<i>Exposure type:</i>	e.g. hollow bore needle, syringe barrel attached / not attached, gauge of needle.
<i>Location:</i>	e.g. park, beach, back alley, home, others.
<i>Disposal:</i>	if the discarded needle(s) still need(s) to be removed from a public area, call the Clean Needle Helpline on 1800 633 353 to arrange for proper disposal.

### Source

The status of the source is generally not known in the common scenario of injury by discarded needles occurring in a public area. In Australia, the level of HIV infection in injecting drug users is below 3% and HIV incidence (percentage of new people infected each year) is low - below 1%.<sup>1</sup> Where the source is known to have a BBV, discuss injury with QCH IMPS.

### Risk assessment

The risk of acquiring BBV infection from discarded injecting equipment is extremely low. No cases of HIV infection in Australia have ever been identified due to discarded injecting equipment<sup>2</sup> ([Table 1](#)). **Almost all CNSI can be managed as low risk for BBV transmission** following exclusion of risk factors of concern.

Examples of factors of concern for possible increased risk of BBV transmission (discuss with IMPS):

- Device visibly contaminated with blood
- Needle directly placed into artery or vein
- Source known to have HIV/Hep B/C infection
- Deep injury / injection with a hollow bore needle.<sup>3</sup>
- Sharing of needles to inject drugs
- Assault / inflicted injury with a needle

HIV is a fragile virus outside the body, especially when exposed to unfavourable external environmental conditions. The blood volume in discarded needles is likely to be less than that associated with exposures in the health care settings.<sup>4</sup>

**Table 1. Risk assessment for transmission of Blood Borne Viruses (BBV)\* following CNSI**

	PROBABILITY OF INFECTION		
	Hospital Related Needle Stick Injuries	Community Acquired NSI	
	NSI in health care worker <sup>(3)</sup> (source status known)	When the origin of needle is known - data from needle sharing in injecting drug users of unknown status <sup>(1)</sup>	When the origin of needle is unknown **
Hep B	Up to 30% if source is HepBag +ve		Unknown but at worst may be ~ 30% if source HepB ag +ve and child not vaccinated
Hep C	1.8% (range 0 - 7%) if source Hep C RNA +ve	1.3 - 4.9% ***	Unknown but anticipated to be far less than previous column
HIV	~ 0.3% if source known to be HIV +ve ****	0.0063% - 0.0084% ***	Data from various sources <sup>(5)</sup> 1/4000 - 1/10000 <sup>(6)</sup> 0/50, Dublin study <sup>(7)</sup> 0/36, Melbourne study <sup>(8)</sup> 0/101, Madrid study

\* BBV are viruses transmissible by significant exposure to contaminated bodily fluids and identifiable by current conventional laboratory methods e.g. Hep B, Hep C and HIV

\*\* Most likely scenario presenting to Emergency Department

\*\*\* Results based on an prevalence of ~65% and <3% of HCV and HIV infections respectively in IDU's in Australia, and a carrier rate of 80% and 100% for HCV and HIV respectively. <sup>(1)</sup>

\*\*\*\* If the blood on the outside and inside surfaces of the needle has dried the risk of HIV transmission is probably lower than 0.3% since the concentration of HIV diminishes by 90-99% within several hours after drying and continues to decrease gradually thereafter. <sup>(9,10)</sup>

## Section 2. Serology

- Obtain verbal consent and provide pre-test counselling. Pre- and post-test counselling are important with respect to HIV and Hepatitis. A positive baseline test for HIV, Hepatitis B or C may indicate that the child has acquired the infection by mother to child transmission.
- Request (baseline) Hepatitis B (HBsAb & HBsAg) serology. Request in addition Hepatitis C and HIV baseline serology if not low risk exposure; **these are not required for low risk exposures.**
- Mark HBsAb **"URGENT"** and request laboratory staff to ring result through to ED.
- HBV serology is performed daily. On weekends and public holidays serology may be performed on next working day; this will generally be able to provide the result to action within 72 hours of exposure. If a long weekend, contact laboratory and discuss availability of earlier testing. Where this guideline is being used outside of QCH, please confirm testing arrangements with relevant pathology provider
- **Do not send the needle or syringe for testing**, as results on discarded injecting equipment are unreliable (and not generally performed by diagnostic laboratories).

## Section 3. Hepatitis B immunisation

**HBIG** – to obtain at QCH call Blood Bank on **(07) 3068 3555**.

- Administer within 72 hours of injury (by intramuscular (IM) injection)
- Recommended schedule:
 

Up to 30 kg	100 international units (IU)
More than 30 kg	400 international units (IU)

**Note:** HBIG comes in vials of 100 IU and 400 IU (concentration is approximately 100 IU per mL).
- HBIG can be given and HBV vaccination commenced as soon as possible, but up to 7 days after exposure (**Note:** Limited evidence for efficacy for later treatment – early treatment preferred).

### Hepatitis B vaccine (IM)

- For all less than 20 year old: Paediatric Engerix B® (10 microgram) 0.5 mL at 0, 1 and 6 months.
- *Alternative for 11 to 15 year olds (only):* Adult Engerix B® (20 microgram) 0.5 mL at 0 and 6 months.
- Arrange appropriate follow up with local medical provider (e.g. GP).
- Hepatitis B vaccine repeated at 1 (if required; see above) and 6 months after 1<sup>st</sup> dose.
- Repeat serology Hep B (HBsAb & HBsAg), Hep C antibody and HIV antibody at 3 months.

## Section 4. HIV post exposure prophylaxis

If due to exceptional circumstances, HIV PEP may be appropriate, see [CHQ-GDL-65664 Paediatric Guideline: Post-Exposure Prophylaxis for HIV](#) and contact QCH Infectious Diseases via QCH switchboard (07) 3068 1111 to discuss.

## Section 5. Management of Tetanus immunisation status

Needle stick injuries are regarded as 'tetanus prone wounds'.

For full details on management of tetanus immunisation, please refer to the [Australian Immunisation Handbook](#).

**Table 2. Tetanus prophylaxis in CNSI**

History of tetanus vaccination	Time since last dose	Give appropriate tetanus booster vaccine	Tetanus immunoglobulin
More than or equal to 3 doses	Less than 5 years	NO	NO
More than or equal to 3 doses	5 to 10 years	YES	NO
More than or equal to 3 doses	More than 10 years	YES	NO
Less than 3 doses or uncertain	-	YES	YES

Also refer to the [CHQ-GDL-01023 Tetanus Prophylaxis in Wound Management](#), which has information on appropriate booster vaccines.

## Acknowledgement

Children's Health Queensland would like to acknowledge the contribution made by:

- Dr Pam Palasanthiran, Dr Mathew O'Meara and Dr Emma Best, Sydney Children's Hospital, Emergency Department Community Needle Stick Injury: Management Protocol

## Consultation

Key stakeholders who reviewed this version:

- Director – Infection Management and Prevention service, Rheumatology and Immunology
- Paediatric Infection Specialists, Infection Management and Prevention Service
- Clinical Pharmacist Lead - Antimicrobial Stewardship
- Chair of CHQ Medicines Advisory Committee– endorsed 03/09/2021

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## Acronymns

AMS	Antimicrobial stewardship
BBV	Blood borne virus
CHQ	Children's Health Queensland
CNSI	Community (acquired) needle stick injury
ED	Emergency department
GP	General Practitioner
HBIG	Hepatitis B Immunoglobulin
HBsAb	Hepatitis B surface antibody
HBsAg	Hepatitis B surface antigen
HBV	Hepatitis B virus
HCV	Hepatitis C virus

HIV	Human Immune deficiency virus
IDU	Injection drug use
IMPS	Infection Management and Prevention Service
IM	Intra-muscular injection
IU	International units
LMO	Local Medical Officer
MO	Medical officer
PEP	Post-exposure prophylaxis
QCH	Queensland Children's Hospital
STI	Sexually transmitted infection
TIG	Tetanus Immunoglobulin

## Guideline revision and approval history

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1.0 04/03/2017	Infectious Diseases Consultant- Antimicrobial Stewardship (Infection Management and Prevention Service)	Medicines Advisory Committee (CHQ)	Executive Director Hospital Services
2.0 19/02/2019	Paediatric Infection Specialists, Infection Management and Prevention Service (QCH)	Medicines Advisory Committee (CHQ)	Executive Director Clinical Services (QCH)
3.0 26/08/2021	Paediatric Infection Specialists, Infection Management and Prevention Service (QCH)  Clinical Pharmacist Lead – Antimicrobial stewardship	Director, Infection Management and Prevention Services, Rheumatology and Immunology (QCH)	A/Division Director Medicine

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<b>Accreditation references</b>	<b>NSQHS Standards (1-8):</b> 3 Preventing and Controlling Healthcare Associated Infections, 4 Medication Safety  ISO 9001:2015 Quality Management Systems: (4-10)