

HS435 Immunisation Guideline: Tetanus, Hepatitis A, Hepatitis B and Q fever

Policy Hierarchy link	UNSW Work Health and Safety Policy HS323 Biosafety Procedure		
Responsible Officer	Director, UNSW Safety and Sustainability		
Contact Officer	Manager, UNSW Work Health and Safety Adam Janssen, Ph: 9385 2214 Email: a.janssen@unsw.edu.au		
Superseded Documents	HS435 Immunisation Guideline: Tetanus, Hepatitis A, Hepatitis B and Q fever, Version 3.0, approved 22 October 2014		
File Number	2015/19789		
Associated Documents	HS329 Risk Management Procedure HS427 Immunisation Questionnaire and Authorisation Form HS079 Decline Immunisation Form		
Version	Authorised by	Approval Date	Effective Date
3.1	Director, UNSW Safety and Sustainability	5 August 2015	5 August 2015

1.	Introduction and Scope	1
2.	Definitions.....	2
3.	Infection overview.....	2
3.1	About Tetanus	2
3.2	About Hepatitis A.....	3
3.3	About Hepatitis B.....	3
3.4	About Q fever	4
4.	Who may be at risk and should be immunised?	4
4.1	Tetanus.....	4
4.2	Hepatitis A	5
4.3	Hepatitis B	6
4.4	Q fever	6
5.	Declining immunisation	7
6.	Arranging/receiving Immunisation.....	7
6.1	Tetanus vaccination.....	7
6.2	Hepatitis A vaccination	8
6.3	Hepatitis B vaccination	8
6.4	Q fever vaccination.....	8
7.	Who pays for the screenings and immunisations?	9
8.	What information is kept by the University about Immunisation?	9
9.	Acknowledgements	9
9.1	References	9
	Appendix A: History.....	10

1. Introduction and Scope

This document was created to assist in making an informed decision regarding the receipt of vaccinations for Tetanus, Hepatitis A, Hepatitis B and/or Q fever infections. It is intended as a guide for UNSW research workers and post-graduate research students who are working with human blood and tissues and/or working with animals, and relates to the four more-likely vaccine-preventable illnesses that people may be exposed to.

It is advised that Project Supervisors undertake a thorough risk management assessment to identify risks specific to any human pathogen brought into a facility and to which they or members of their research group may be exposed. This includes possible zoonoses from research animals and during field trips. The UNSW Immunisation Questionnaire and Authorisation form can assist in determining the need for vaccination and to record the decision.

Note: Tetanus, Hepatitis A, acute Hepatitis B, newly identified chronic Hepatitis B and Q fever are notifiable diseases in all states and territories in Australia. In NSW, if an employee contracts Q fever it must be reported to WorkCover.

Any infection, to which the carrying out of work is a significant contributing factor, is a notifiable incident which must be reported as soon as possible to the Head of School or Research Group and to the UNSW Health and Safety Unit.

This document does not cover the vaccination requirements for those staff members and students who will be working in healthcare settings. Information about occupational immunisation requirements in these settings can be found at the NSW Health website (see 9.1 References).

This document is not a general vaccination guide. A comprehensive guide is available online (NHMRC Immunisation Handbook 10th edition). UNSW staff members and students who are travelling overseas for any purpose are advised to consult with their general practitioner, the UNSW Health Service, the NHMRC Immunisation Handbook, the World Health Organisation (WHO) website and/or the Federal Government's Smart Traveler website (see 9.1 References), for both general and specific information related to the need for travel vaccinations.

2. Definitions

Antibody - a blood protein produced in response to and counteracting the presence of a foreign substance in the blood (an antigen).

Antigen – a foreign substance such as a toxin, bacteria or viruses, which induce an immune response in the body (such as the production of antibodies).

dT, dTpa – diphtheria-tetanus vaccine, diphtheria-tetanus-acellular pertussis vaccine.

HAV - Hepatitis A virus.

HBV - Hepatitis B virus.

Immunisation – the process which includes receiving a vaccine which then stimulates the immune system, enabling it to mount an immune response and protect against future infections.

Sero-convert – to develop antibodies in the blood serum to a particular disease as a result of immunisation or infection.

Tetanus-prone wound - those other than clean, minor cuts, including wounds where disinfection has been delayed by more than 4 hours (see 3.1 for examples).

Vaccination - the administration of antigenic material (the vaccine) to individuals in order to produce immunity to a disease in that individual.

Zoonoses – diseases that can be transmitted from animals to humans.

3. Infection overview

3.1 About Tetanus

Tetanus is a notifiable disease in all states and territories in Australia.

It is an acute, extremely painful, and often fatal disease brought about by the toxin produced by *Clostridium tetani*. Any tetanus-prone wound can become contaminated with *C. tetani*. Tetanus-prone wounds are those other than clean, minor cuts. They include wounds where disinfection has been delayed by more than 4 hours, compound fractures, bites, deep penetrating wounds, wounds containing foreign bodies (especially wood splinters), wounds producing pus, where there is extensive tissue damage, or where there is contamination by dust, soil and/or horse manure.

Tetanus symptoms

The toxin causes very severe, painful muscle spasms beginning in the jaw and neck, difficulty swallowing and breathing, abnormal heart rhythms, violent and painful convulsions, and rigidity.

Incubation is usually 3 to 21 days, with the median time to onset being 10 days, but it could manifest after several months. Complications include suffocation, pneumonia, high or low blood pressure, heart attack, often leading to death.

3.2 About Hepatitis A

Hepatitis A is a notifiable disease in all states and territories in Australia.

It is an acute infection by the Hepatitis A virus (HAV), which causes inflammation of the liver. The virus is spread by the faecal-oral route, that is, ingestion of food or water that has been contaminated by HAV.

HAV survives well in the environment outside of the human host. It persists on hands for several hours and in food kept at room temperature for considerably longer. It is relatively resistant to heat and freezing.

Hepatitis A symptoms

HAV infection causes loss of appetite, abdominal pain, jaundice (yellowing of the skin, conjunctiva and mucous membranes) and dark urine. The incubation period is 15 to 50 days, with the infection usually lasting less than 2 months and is rarely severe or fatal. The infectious dose is not known but it is thought to be quite low.

HAV is excreted in faeces for up to 2 weeks before the onset of illness and for at least 1 week afterwards. There is usually a 4 to 10 day prodrome of general malaise, anorexia, progressing to fever, nausea and vomiting. Dark urine is usually the first specific indicator of HAV infection.

3.3 About Hepatitis B

Hepatitis B is a notifiable disease in all states and territories in Australia.

Acute Hepatitis B (HBV) and newly identified chronic Hepatitis B are notifiable diseases in all states and territories in Australia.

HBV is a vaccine-preventable viral infection, which can cause both acute and chronic (i.e. ongoing) inflammation of the liver. Chronic Hepatitis B infection leads to serious long-term consequences including cirrhosis of the liver.

Worldwide, the most common means of spreading HBV is from mother-to-baby at birth. In many developing countries, up to 20% of mothers are asymptomatic carriers of HBV and have a high likelihood of infecting their offspring.

In Australia, the major mode of spread is blood-to-blood contact via injecting drug use, tattooing, or via sexual contact. In the laboratory or clinical settings, HBV is transmitted by direct transfer of infected blood or bodily fluids usually through sharps injury and it is one of the most commonly reported laboratory acquired infections.

Hepatitis B symptoms

Acute Hepatitis B

The acute illness is clinically indistinguishable from other forms of hepatitis. Symptoms include fever, jaundice, malaise, anorexia, nausea and vomiting, abdominal pain (especially in the right upper quadrant), myalgia, and the passage of dark-coloured urine and light-coloured stools. Jaundice (yellowing of the skin, conjunctiva and mucous membranes) may be preceded by an acute febrile illness with joint pain or arthritis and rash, most typical of hepatitis B infection. During recovery, malaise and fatigue may persist for many weeks.

The average incubation period is usually 45 to 180 days, and the period of communicability extends from several weeks before the onset of acute illness, usually to the end of the period of acute illness, if the person is able to clear the virus in this phase. General malaise and tiredness can continue for many weeks.

Chronic Hepatitis B

Up to 10% of those infected in adulthood become chronically infected and are capable of transmitting the virus. If young children are infected, up to 90% become chronically infected.

Chronic HBV infection can lead to death due to liver cirrhosis and/or carcinoma in up to 25% of cases.

3.4 About Q fever

Q fever is amongst the most serious infective hazards for occupational health in Australia and there are increasing reports of Q fever cases in rural and urban areas. It is a notifiable disease in all states and territories in Australia and a work-related infection is a WorkCover-reportable illness in NSW. There is an increasing recognition of long-term sequelae.

Q fever is a zoonotic infectious disease (i.e. animal acquired) caused by the bacterium, *Coxiella burnetii*, which can be harboured by many domesticated and wild animals.

The organism is highly infectious and very resistant to environmental extremes, surviving well in air, soil, water and dust, and may also be carried by fomites. Infection is transmitted to humans via aerosols from contaminated body fluids of infected animals (which typically have no apparent evidence of disease).

It is not found in laboratory rodents. It is not transmitted between humans.

Q fever symptoms

Infection may be asymptomatic.

Acute Q fever

Incubation is between 4 to 40 days and commonly presents with the rapid onset of high fever, rigors, profuse sweats, extreme fatigue, muscle and joint pain, loss of appetite, severe headaches and photophobia. There is often evidence of hepatitis and sometimes pneumonia. The illness lasts up to 3 weeks if untreated. Acute Q fever leads to a protracted post Q fever fatigue syndrome lasting several months in about 10% of cases, leading to several weeks off work.

Post Q fever fatigue syndrome occurs in 10-15% of people who had the acute illness.

Chronic Q fever

The most common symptom of chronic Q fever is subacute endocarditis. Other less common symptoms are granulomatous lesions in the bones, joints, liver, lung, testes and soft tissues and may also cause foetal damage.

4. Who may be at risk and should be immunised?

To assist with determining whether you are at risk, complete the UNSW Immunisation Questionnaire and Authorisation Form (HS427) to help identify and then record this risk (link provided in 9.1).

If you are uncertain of the risk, of your immune status, or if you are pregnant/breastfeeding, you should contact the UNSW Health Service on 9385 5425, your general practitioner, or alternatively, the UNSW Biosafety Coordinator on 9385 2911, to confidentially discuss your particular situation.

Note: Work colleagues and immediate family will not need to be immunised unless they are also in an at-risk group. The appropriate use of controls should be sufficient to protect others in the environs. If an at-risk worker is exposed to the pathogen and particularly if they present with the symptoms, medical advice should be sought immediately regarding vaccination of immediate colleagues and family.

4.1 Tetanus

Effective protection against tetanus can only be provided by active immunisation because the amount of tetanus toxin required to produce clinical symptoms is too small to induce a protective antibody response.

Anyone in an 'at-risk' group, who has never received tetanus immunisation or who has not been vaccinated in the previous 10 years should consider receiving the vaccine as a preventative measure.

Also known as 'lock-jaw', it is now relatively rare in Australia since the introduction of vaccination, although immunity to tetanus is waning in the older population (50+ years) if a booster has not been received since childhood. It is uncommon in people who have received 4 or more doses of a tetanus-containing vaccine and in those who received their last dose within 10 years.

Any adult sustaining a tetanus-prone injury should receive a booster of dT or dTpa if more than 5 years have passed since their last dose.

Those at risk include:

- anyone handling animals and their cages as part of their work and/or research, as they are at risk of scratches, bites and cuts;
- anyone handling *Clostridium tetani* or its toxin as part of their work or research;
- outdoor and grounds workers, gardeners and anyone handling manure, manured soils or items that have come into contact with such;
- anyone who receives a tetanus-prone injury or whose work could lead them to sustaining a tetanus-prone injury (see 3.1 for definition); or
- a Risk Assessment has identified that you might be at risk.

People on field trips should also ensure that they carry a first aid kit that will enable them to thoroughly disinfect any wound as soon as possible.

Any doubt about the tetanus-immune status of a person who has a tetanus-prone wound, should receive tetanus immunoglobulin (TIG) as soon as possible, as well as tetanus toxoid-containing vaccine, to provide both *immediate passive* and also active protection.

If a person is immune-compromised and they receive a tetanus-prone injury, they should receive a dose of tetanus immunoglobulin (TIG) as soon as possible.

Contraindications

- Anyone who has experienced anaphylaxis following a previous tetanus-containing vaccine, or following any vaccine component. You must inform the treating medical practitioner.

4.2 Hepatitis A

You should consider being immunised against HAV if you are in one of the following at-risk groups:

- anyone handling HAV as part of work or research;
- anyone who may be exposed to faecal material, blood, liver tissue, and bile during work activities;
- anyone whose work brings them into contact with chimpanzees and other non-human primates;
- UNSW First Aiders;
- anyone working at UNSW child care centres;
- anyone whose work Risk Assessment has identified that they might be at risk; and
- any of the above groups if you are immunosuppressed or have a chronic liver condition.

Immunity after HAV infection is life-long, and immunity following vaccination is probably life-long. There is no evidence to suggest that there is a need for a booster.

Contraindications

- Anyone who has experienced anaphylaxis following a previous HAV vaccine, or following any vaccine component. You must inform the treating medical practitioner.

4.3 Hepatitis B

It is preferable to eliminate the risk of exposure to HBV by using only blood and body tissues that have been screened for the presence of the virus, for example, by obtaining your blood samples from the blood bank. You can reduce the risk of exposure by working in biosafety cabinets, by following standard infection control procedures and also by avoiding the use of sharp items.

You should consider being immunised against Hepatitis B if you are in one of the following at-risk groups:

- workers and students whose work brings them into contact with patients;
- workers and students whose work involves handling potentially contaminated blood, body tissues or body fluids, including saliva;
- workers handling HBV as part of work or research;
- First Aid Officers;
- cleaners and maintenance workers at risk of unexpected exposure to inappropriately discarded needles, syringes and broken glassware that may be contaminated with blood or body fluids;
- a Risk Assessment has identified that you might be at risk; or
- any of the above groups if you are immunosuppressed or have a chronic liver condition.

People who have already received the Hepatitis B vaccination course, and have been tested to show successfully sero-conversion, are unlikely to need a booster.

Contraindications

- Anyone who has experienced anaphylaxis following a previous HBV vaccine, following any vaccine component or has a history of anaphylaxis to yeast. You must inform the treating medical practitioner.

4.4 Q fever

You are considered at risk of exposure if you are working with or handling:

- animals that could be infected, particularly pregnant animals, including stock animals (eg cattle, pigs, sheep, goats), as well as native animals (eg kangaroos, bandicoots and others), and also companion animals (cats, dogs);
- unfixed tissue (including carcasses and waste) from any animals that could be infected with Q fever;
- unfixed human samples (blood or tissue) that could be from individuals with acute or chronic Q fever;
- animal products of conception;
- *Coxiella burnetii* as part of your work; or
- any of the above **and** it is less than 15 days since you were vaccinated.

You are also considered at risk if you are visiting, working in, or servicing areas housing the animals identified above, such as anatomy or surgical facilities, abattoirs, stockyards, shearing sheds and anywhere where there is unfixed tissue or animal wastes.

Requirement for a vaccination will be depend on what activities will be performed, where the potential exposure will occur (eg in an abattoir) and the frequency and period of time (ie an hour or several days?). When going off campus, the place to be visited may have additional requirements for personal protective equipment and vaccinations for visitors.

Contraindications to Q fever vaccination

Subject to advice from a medical practitioner, certain individuals may not require or be suitable for vaccination including:

- persons with a history of laboratory-confirmed Q fever, or with medical documentation that supports a previous diagnosis of Q fever;

- persons shown to be immune by either serological testing or sensitivity to the organism by skin testing (See section 5);
- persons who have been previously vaccinated against Q fever;
- persons with known hypersensitivity to egg proteins or any component of the vaccine;
- Skin-testing and vaccination should be avoided by immunocompromised persons and person under the age of 15 years; and
- Not routinely recommended for pregnant or breast-feeding women.

5. Declining immunisation

Vaccination for UNSW research workers and post-graduate research students is not mandatory and there may be several reasons for a person to decline immunisation. If the risk of exposure to an infectious agent has been identified, and there is a vaccine available and therefore offered, individuals may choose to decline to receive the vaccine. It is recommended that these individuals discuss any of their concerns with a medical practitioner before making this decision.

Those who choose not to receive the identified vaccine may be stopped from doing certain aspects of their work by their School/Centre.

Individuals should sign a HS079 Decline Immunisation Form (see 9.1) and give it to their supervisor. If in the future the worker or student is still working with the infectious agent and decides that they want to be vaccinated, then vaccination will be made available at no cost to the individual.

Where a person has already received any of the vaccinations for previous employment or personal reasons, revaccination may not be necessary, and may be contraindicated. In such cases, the individual should follow medical advice. If advised not to revaccinate, the person should sign the decline vaccination form, giving the reason that the vaccination has already received, and date received. If the date is not known, an approximate date needs to be provided.

Where the risk of infection is particularly significant, the individual may be asked to provide evidence of their immunisation to their supervisor, such as their immunisation record. Individuals can discuss any concerns with a medical practitioner.

6. Arranging/receiving Immunisation

Where a person has been identified as being at risk of an infection due to their UNSW work or research activity for which a vaccine is available, and has consented to receive the vaccinations, it is the responsibility of the supervisor and the School/Centre to ensure that the person receives the vaccination(s), including any pre-screening, all doses over the appropriate period of time, and any follow-up tests for the presence of antibodies.

6.1 Tetanus vaccination

Contact the UNSW Health Service on 9385 5425 or your general practitioner to make an appointment. UNSW Canberra workers need to book an appointment with a medical practitioner for the approved vaccination.

The vaccination process for people who have not been immunised for Tetanus consists of 3 doses of dT at minimum intervals of 4 weeks and a booster after 10 years. People who have not had a booster in the previous 10 years should receive a booster dose. Adults who have sustained injuries deemed to be tetanus-prone (all wounds other than clean minor cuts) should receive a booster dose of dT if it has been more than 5 years since their last dose of tetanus-containing vaccine.

Mild discomfort at the injection site is common and can persist for a few days. Sometimes it may accompany a feeling of being unwell. If you have any concerns following vaccination, you should contact the doctor who treated you.

6.2 Hepatitis A vaccination

Contact the UNSW Health Service on 9385 5425 or your general practitioner to make an appointment. UNSW Canberra workers need to book an appointment with a medical practitioner for the approved vaccination.

Vaccination for HAV consists of two doses, 6 – 12 months apart. The HAV vaccine is well tolerated, with local soreness at the injection site and sometimes a headache, being the only common side effect.

A person who has previously been vaccinated for HAV and is subsequently exposed to possible HAV-contaminated substances, should seek immediate medical advice to determine the need for a booster dose.

6.3 Hepatitis B vaccination

Contact the UNSW Health Service on 9385 5425 or your general practitioner to make an appointment. UNSW Canberra workers need to book an appointment with a medical practitioner for the approved vaccination. If you have any concerns following vaccination, you should contact the doctor who treated you.

Side effects of HBV vaccination are rare and generally mild. They include short-lived pain and redness at the injection site, and possible fever.

For people with an immediate risk of exposure and have not been immunised, immunisation involves receiving three doses of the vaccine over two months (one month apart) then a fourth dose at 12 months after the first dose.

Otherwise the doses are received over six months (ie second dose after one month, third dose at six months after the first). This usually provides sufficient antibodies against HBV; however, in order to determine whether you have developed immunity, you need to be tested 4 to 8 weeks after the third dose to see if you have responded by developing antibodies (seroconverted). Approximately 93% of people will seroconvert.

A non-responder in an at-risk group can receive a fourth dose to confirm non-responder status. If the person has not seroconverted after the fourth dose they should have a further 2 doses at monthly intervals and be retested. Should the person still not respond, medical advice should be sought to help determine options.

Boosters are not usually recommended, unless a person is immunosuppressed, has not seroconverted or is unable to provide an immunisation record indicating that they have received all three doses. It is recommended that individuals take advice from the UNSW Health Service or their general practitioner.

6.4 Q fever vaccination

Pre-vaccination screening and immunisation can only be conducted by an authorised provider. At the conclusion you should be given a certificate that indicates the status of your immunity, and your details added to the Australian Q Fever Register.

The UNSW Health Service does not provide Q fever screening and immunisation, and your preferred general practitioner may not provide this service either. You need to enquire before making an appointment. The University of Sydney Health Centre (phone 9351 3484) provides this service, as do many of the international travel vaccinations centres. You must make it clear that you require a Q fever vaccination. If you have any concerns following vaccination, you should contact the doctor who treated you.

Two appointments will be needed for Q fever vaccination and these will be one week apart so you must be prepared to make that time available. The first appointment is for the pre-vaccination screening and the second appointment is to receive the screening results and the vaccination. Where several people require an appointment, it is recommended that their first appointment be made for the same day, as this may help to bring down the cost of the skin test.

7. Who pays for the screenings and immunisations?

If you are a UNSW worker or post-graduate student (including honours research) and in an at-risk group for a vaccine-preventable disease such as Tetanus, HAV, HBV and/or Q fever as described in this guideline, your School/Centre will pay for any pre-screening, vaccinations and blood test (as appropriate). You must complete the UNSW Immunisation Questionnaire and Authorisation Form, and have it signed by the responsible officer in your School/Centre. Each School/Centre has their own local arrangement for how the costs are covered and your responsible officer will be able to provide those details.

For appointments that are not with the UNSW Health Service, it is advised that you ask about the cost when you make the appointment, as you will be required to pay for your consultation and vaccination on the day of the appointment, and then claim this back through your School/Centre.

Consideration needs to be given to research workers and students who are at UNSW for only a short time as they might not have sufficient time to receive the identified vaccinations and develop sufficient immunity. Where possible, people should plan well in advance, or other control methods be utilised, such as not participating in the specific, risk activity.

Undergraduate students requiring vaccination as part of their course-work, must arrange and pay for the vaccinations themselves.

8. What information is kept by the University about Immunisation?

If you have had immunisations as a requirement of your work or study at UNSW and you receive the vaccinations through the UNSW Health Service, the UNSW Health Service will maintain a record of immunisations you have received and when they were given. For cases requiring multiple injections and/or pre or post-screening, this helps keep track of each person as they go through the immunisation process, enabling UNSW Health Service to send reminders for appointments.

Your supervisor must keep a copy of the record of your record of authorisation (HS427) or decline (HS079). The record of immunisation is given to the individual. Any medical information collected during the immunisation process remains confidential, stored by the administering practitioner.

For any inquiries about immunisation contact the UNSW Health Service on 9385 5425 or your general practitioner.

9. Acknowledgements

Information in this document is from several sources including Policies, Procedures and/or Guidelines developed by Monash University.

9.1 References

[The Australian Immunisation Handbook](#), 10th edition, NHMRC, 2013

[Public Health Agency of Canada](#) - for Pathogen Safety Data Sheets

[WHO International](#)

Australian Federal Government [Smart Traveller](#)

[NSW Health occupational immunisation requirements](#)

NSW Government [Q Fever fact sheet](#)

[UNSW Biosafety webpage](#)

[Immunisation Questionnaire and Authorisation](#) Form (HS427)

[Decline of Immunisation Authorisation form](#) (HS079)

Appendix A: History

Version	Authorised by	Approval Date	Effective Date	Sections modified
1.0	Director Human Resources	01 Jan 2007	01 Jan 2007	New document
2.0	Director Human Resources	14 April 2011	14 April 2011	Document content reviewed, reformat to UNSW Guideline template (KN)
2.1	Director Human Resources	24 April 2012	24 April 2012	Terminology re WHS legislation 2011. Reporting requirements
2.2	Director Human Resources	14 April 2013	14 April 2013	Updated Branding Logo in accordance with UNSW Branding Guidelines. Modified the document identifier from OHS to HS in accordance with WHS legislation review
3.0	UNSW Director Safety & Sustainability	23 October 2014	23 October 2014	Combine Hep A, Hep B & Q fever guidelines into one document. Add Tetanus. Add symptoms information. Expand decline vaccination, & Hep B & Q fever vaccination processes. Updated links, references & authorising Director
3.1	UNSW Director Safety & Sustainability	5 August 2015	5 August 2015	Revise wording for National Audit Tool, check links