Introduction
Workers in a variety of occupations may be exposed to infectious agents during their employment. In the Irish workforce, the largest at risk group are Health Care Workers (HCWs). Other groups at significant risk include security & emergency services workers.

A risk assessment should be performed to establish if vaccinations are required for employees in a particular work setting. This is required under the Safety, Health & Welfare at Work Act (Biological Agents Regulations). It should ideally occur before commencing employment or work placement. A decision to vaccinate a worker should be based on the activities they perform rather than their job title.

Persons who travel abroad in the course of their work are advised to have a travel health risk assessment by a competent health professional at least 6 weeks prior to the intended travel date. Employers should facilitate access to such professional advice, at least 6 weeks prior to the intended travel date.

In relation to HCWs, immunisation should be regarded as one part of good infection control practices, which include hand washing and universal precautions when dealing with body fluids. Immunisation is an essential component in preventing transmission of infections.

**Group 1: Health Care Workers (HCW)**
This refers to those who have direct patient contact, both clinical and non-clinical staff.
• Medical, Nursing, and Allied Health Professionals
• Medical, Nursing and Allied Health Students
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- Dentists and Dental Assistants
- Hospital Porters and Cleaners
- Ambulance Personnel
- Other At Risk Health care Personnel and Volunteers

Hepatitis A
- Hepatitis A vaccination should be given to those individuals above, e.g. paediatric hospital staff, workers who handle faeces as a diagnostic sample, or during local outbreaks.

Hepatitis B
- A course of Hepatitis B vaccination should be given if not previously vaccinated.
- Anti-HBs levels must be checked two months after the final dose of vaccine.
- Anti-HBs levels must be checked if previously vaccinated against hepatitis B and the response is not known (see Chapter 9 for adequate response levels).

BCG
- BCG is indicated for HCWs aged <35 who are unvaccinated and are TST negative, who will have contact with TB patients or with clinically contaminated material.
- Not all HCWs are at equal risk of TB. A risk assessment should be carried out to see if BCG is indicated for unvaccinated HCWs aged 35 and older who are TST negative, taking into account their country of origin and the nature of their work. For more details see page 114 of Guidelines on the Prevention and Control of Tuberculosis in Ireland 2010. http://www.hpsc.ie/A-Z/VaccinePreventable/TuberculosisTB/Publications/File,4349,en.pdf
- Any HCW who has been in close contact with a case of smear-positive tuberculosis should be assessed by an occupational health or public health professional.

Varicella
- Health care workers without a definite history of varicella, proof of immunity or documented evidence of 2 doses of vaccine, particularly those working with haematology, oncology, obstetric, paediatric or neonatal patients, should be routinely screened for VZ antibody. A history of varicella is a less reliable predictor of immunity in individuals born and raised overseas, and therefore routine testing should be considered in this group of HCWs. In addition, HCWs from outside Ireland and Western Europe are less likely to be immune. Vaccination should be given to non-immune staff.
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• Laboratory staff who may be exposed to varicella virus in the course of their work should be offered vaccination.
• Post-vaccination serological testing is not recommended. Where exposure occurs in a susceptible HCW, advice should be sought from Occupational Health on further management and possible temporary exclusion from the workplace.

Influenza
• Health care workers should be given seasonal influenza vaccination each autumn.

Measles, Mumps, Rubella
Most health care workers born in Ireland before 1978 are likely to have had infection. MMR vaccine should be offered to such individuals on request if they are considered at high risk of exposure.

Health Care Workers born in Ireland since 1978 or born outside Ireland in the following situations
• Those who do not have serological evidence of infection or documented evidence of 2 doses of MMR vaccine should be given 1 or 2 doses of MMR as required separated by at least 1 month so that a total of 2 doses are received.
• When exposure occurs in a susceptible HCW, advice should be sought from Occupational Health on further management and possible exclusion from the workplace. If an outbreak of measles occurs in an institution or an area served by an institution, all HCWs without evidence of infection or two doses of MMR vaccine should be given 1 or 2 doses of MMR vaccine as required.
• Note that persons who are sensitive to PPD may have a negative TST for three months after MMR vaccination.

Pertussis
• A booster dose of Tdap is recommended for Health Care Workers who are in contact with infants, pregnant women and the immunocompromised. Boosters every 10 years may be considered (see Chapter 15).

Group 2: Prison Workers
This includes Prison Officers and Prison Administration and Support Officers.

Hepatitis B
• All prison workers should be strongly encouraged to receive hepatitis B vaccination if not previously vaccinated (see Chapter 9 for immunisation schedule). Either a rapid (0, 1, 2 & 12 months) or very rapid (0, 7, 21 days
and 12 months) schedule should be used. Anti-HBs levels should be checked 2 months after the final dose of vaccine (see Chapter 9 for adequate response levels).

**BCG**
- Unvaccinated prison workers (i.e. without adequate BCG documentation or characteristic scar) aged <35 years who will have contact with prisoners and who are TST or IGRA negative should be offered BCG vaccination.
- Any prison worker who has been in close contact with a case of smear-positive tuberculosis should be assessed by a public health professional.

**Group 3: Security & Emergency Services**
- Members of Security and Rescue Services
- Members of An Garda Síochána
- Members of the Fire Brigade
- Members of the Defence Forces
- Employees of Security Companies
- Other workers potentially exposed to ‘Blood To Blood’ injuries.

**Hepatitis B**
- All workers in this category should be offered hepatitis B vaccination if not previously vaccinated. Anti-HBs levels should be checked 2 months after the final dose of vaccine (see Chapter 9 for adequate response levels).

**Group 4: Laboratory & Research Workers**
This includes scientists dealing with human body fluids, e.g.
- Medical laboratory technicians
- Research scientists.

**Hepatitis A**
- All workers in this category who handle faeces as a diagnostic sample should be checked for hepatitis A immunity, and if not immune, should be offered hepatitis A vaccine (see Chapter 8 for schedule).

**Hepatitis B**
- All workers in this category should be offered hepatitis B vaccination if not previously vaccinated. Anti-HBs levels should be checked 2 months after the final dose of vaccine (see Chapter 9 for adequate response levels).

**Polio**
- Workers in this category who handle faeces as a diagnostic sample should show evidence of polio vaccination and may need to be offered immunisation (see Chapter 17 for immunisation schedule).
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**Diphtheria**
- Workers in this category who handle material that may contain pathogenic corynebacteria require a diphtheria containing booster (Td) every 10 years. This includes most laboratory staff (see Chapter 6 for immunisation schedule).

**BCG**
- BCG is indicated for unvaccinated laboratory workers aged <35 years who are TST negative and will have contact with contaminated material or TB isolates.
- Not all HCWs are at equal risk of TB. A risk assessment should be carried out to see if BCG is indicated for unvaccinated HCWs aged 35 and older who are TST negative, taking into account their country of origin and the nature of their work.


**Other Micro-Organisms**
- Medical laboratory staff working in higher risk settings (e.g. reference laboratories or working in infectious disease units or with other clinical contact) or those conducting research into specific organisms should be considered for immunisation against these organisms (e.g. Japanese encephalitis, cholera, meningococcal ACWY, meningococcal B, typhoid, influenza, varicella and rabies).

**Group 5: Veterinary & Animal Workers**
This includes persons who work with animals and have exposure to animal tissues, e.g. veterinary staff, abattoir workers, zoological workers, dog wardens, veterinary inspectors, agricultural officers and poultry workers.

**BCG**
- This may be recommended to those at increased risk (see Chapter 22).

**Rabies**
- This may be recommended to those at increased risk (see Chapter 18).

**Tetanus**
- Tetanus containing vaccine (Td) is recommended every 10 years for to those at increased and ongoing risk of being in contact with tetanus spores. Tetanus spores are present in the soil, and in the intestine and faeces of cattle, sheep, horses, chicken, dogs, cats, rats, guinea pigs, and chickens (see Chapter 21).
**Influenza**

- Agricultural workers who have close, regular contact with pigs, poultry or water fowl should receive seasonal influenza vaccination. This is to reduce the risk of co-infection with Avian Influenza virus.

**Hepatitis A**

This is recommended for susceptible staff working with non-human primates susceptible to hepatitis A infection.

**Group 6: Other Occupational Groups**

- Workers in contact with faecal material should be checked for hepatitis A immunity. Those not immune to hepatitis A may be offered hepatitis A vaccination.
  - sewage & water treatment workers
  - crèche workers
  - selected aircraft maintenance workers

- Staff of institutions for persons with learning difficulties should be offered Hepatitis A and B vaccination if not previously vaccinated.

- Welders: there is a strong association between welding and the development of invasive pneumococcal disease. Pneumococcal polysaccharide vaccine (PPV) should be offered to welders and other workers exposed to metal fumes (see Chapter 16).

**Occupational Body Fluid Exposure**

Occupational blood and body fluid exposures (e.g. through needle stick or sharp injuries, bites, breaches of skin and mucosal exposure) may occur in the health care sector. For guidance refer to Chapter 9 and the Emergency Management of Injuries (HPSC, see reference below).

**Bibliography**