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Immunisation of healthcare and laboratory staff

Health and safety at work

Under the Health and Safety at Work Act (HSWA) 1974, employers, employees and the self-employed have specific duties to protect, so far as reasonably practicable, those at work and others who may be affected by their work activity, such as contractors, visitors and patients. Central to health and safety legislation is the need for employers to assess the risks to staff and others.

The Control of Substances Hazardous to Health (COSHH) Regulations 2002 require employers to assess the risks from exposure to hazardous substances, including pathogens (called biological agents in COSHH), and to bring into effect the measures necessary to protect workers and others from those risks as far as is reasonably practicable.

Pre-employment health assessment

All new employees should undergo a pre-employment health assessment, which should include a review of immunisation needs. The COSHH risk assessment will indicate which pathogens staff are exposed to in their work-place, and staff considered to be at risk of exposure to pathogens should be offered routine pre-exposure immunisation as appropriate. This decision should also take into account the safety and efficacy of available vaccines. Staff not considered to be at risk need not routinely be offered immunisation, although post-exposure prophylaxis may occasionally be indicated.

Provision of occupational health immunisations

Employers need to be able to demonstrate that an effective employee immunisation programme is in place, and they have an obligation to arrange and pay for this service. It is recommended that immunisation programmes are managed by occupational health services with appropriately qualified specialists. This chapter deals primarily with the immunisation of healthcare and laboratory staff; other occupations are covered in the relevant chapters.

Immunisation of healthcare and laboratory staff

Any vaccine-preventable disease that is transmissible from person to person poses a risk to both healthcare professionals and their patients. Healthcare workers have a duty of care towards their patients which includes taking reasonable precautions to protect them from communicable diseases. Immunisation of healthcare and laboratory workers may therefore:

- protect the individual and their family from an occupationally-acquired infection
- protect patients and service users, including vulnerable patients who may not respond well to their own immunisation
- protect other healthcare and laboratory staff
- allow for the efficient running of services without disruption.

The most effective method for preventing laboratory-acquired infections is the adoption of safe working practices. Immunisation should never be regarded as a substitute for good laboratory practice, although it does provide additional protection. Staff who work mainly with clinical specimens or have patient contact may be exposed to a variety of infections, while staff who mainly work with specific pathogens are only likely to be exposed to those pathogens handled in their laboratory.

Many employers are directly or indirectly involved in the provision of health-care and other patient services. Employees may be working in general practice, in the NHS, nursing homes or private hospitals and clinics. Full- or part-time permanent and agency staff should also have a health assessment.

Further information on pre-employment health assessments for healthcare staff, record-keeping and the exchange of employee records between hospitals can be found in the Association of National Health Occupational Physicians (ANHOPS) guidelines (ANHOPS, 2004). The health assessment for laboratory staff should take into account the local epidemiology of the disease, the nature of material handled (clinical specimens or cultures of pathogens or both), the frequency of contact with infected or potentially infected material, the laboratory facilities (including containment measures), and the nature and frequency of any patient contact. Staff considered to be at risk of exposure to pathogens should be offered pre-exposure immunisation as appropriate.

Following immunisation, the managers of those at risk of occupational exposure to certain infections, as well as the workers themselves, need to have

sufficient information about the outcome of the immunisation to allow appropriate decisions to be made about potential work restrictions and about post-exposure prophylaxis following known or suspected exposure.

Recommendations by staff groups

The objective of occupational immunisation of healthcare and laboratory staff is to protect workers at high risk of exposure and their families, to protect patients and other staff from exposure to infected workers, and to sustain the workforce. Potential exposure to pathogens, and therefore the type of immunisation required, may vary from workplace to workplace. Guidance on the types of immunisation that may be appropriate follows.

Staff involved in direct patient care

This includes staff who have regular clinical contact with patients and who are directly involved in patient care. This includes doctors, dentists, midwives and nurses, paramedics and ambulance drivers, occupational therapists, physiotherapists and radiographers. Students and trainees in these disciplines and volunteers who are working with patients must also be included.

Routine vaccination

All staff should be up to date with their routine immunisations, e.g. tetanus, diphtheria, polio and MMR. The MMR vaccine is especially important in the context of the ability of staff to transmit measles or rubella infections to vulnerable groups. While healthcare workers may need MMR vaccination for their own benefit, they should also be immune to measles and rubella in order to assist in protecting patients. Satisfactory evidence of protection would include documentation of having received two doses of MMR or having had positive antibody tests for measles and rubella.

Selected vaccines

BCG

BCG vaccine is recommended for healthcare workers who may have close contact with infectious patients. It is particularly important to test and immunise staff working in maternity and paediatric departments and departments in which the patients are likely to be immunocompromised, e.g. transplant, oncology and HIV units (see Chapter 32 on TB).

Hepatitis B

Hepatitis B vaccination is recommended for healthcare workers who may have direct contact with patients' blood or blood-stained body fluids. This includes

any staff who are at risk of injury from blood-contaminated sharp instruments, or of being deliberately injured or bitten by patients. Antibody titres for hepatitis B should be checked one to four months after the completion of a primary course of vaccine. Such information allows appropriate decisions to be made concerning post-exposure prophylaxis following known or suspected exposure to the virus.

Influenza

Influenza immunisation helps to prevent influenza in staff and may also reduce the transmission of influenza to vulnerable patients. Influenza vaccination is therefore recommended for healthcare workers directly involved in patient care, who should be offered influenza immunisation on an annual basis.

Varicella

Varicella vaccine is recommended for susceptible healthcare workers who have direct patient contact. Those with a definite history of chickenpox or herpes zoster can be considered protected. Healthcare workers with a negative or uncertain history of chickenpox or herpes zoster should be serologically tested and vaccine only offered to those without the varicella zoster antibody.

Non-clinical staff in healthcare settings

This includes non-clinical ancillary staff who may have social contact with patients but are not directly involved in patient care. This group includes receptionists, ward clerks, porters and cleaners.

Routine vaccination

All staff should be up to date with their routine immunisations, e.g. tetanus, diphtheria, polio and MMR. The MMR vaccine is especially important in the context of the ability of staff to transmit measles or rubella infections to vulnerable groups. While healthcare workers may need MMR vaccination for their own benefit, they should also be immune to measles and rubella in order to assist in protecting patients. Satisfactory evidence of protection would include documentation of having received two doses of MMR or having had positive antibody tests for measles and rubella.

Selected vaccines

BCG

BCG vaccine is not routinely recommended for non-clinical staff in healthcare settings.

Hepatitis B

Hepatitis B vaccination is recommended for workers who are at risk of injury from blood-contaminated sharp instruments, or of being deliberately injured or bitten by patients. Antibody titres for hepatitis B should be checked one to four months after the completion of a primary course of vaccine. Such information allows appropriate decisions to be made concerning post-exposure prophylaxis following known or suspected exposure to the virus.

Varicella

Varicella vaccine is recommended for susceptible healthcare workers who have regular patient contact but are not necessarily involved in direct patient care. Those with a definite history of chickenpox or herpes zoster can be considered protected. Healthcare workers with a negative or uncertain history of chickenpox or herpes zoster should be serologically tested and vaccine only offered to those without varicella zoster antibody.

Influenza

Influenza vaccination is not routinely recommended in this group.

Laboratory and pathology staff

This includes laboratory and other staff (including mortuary staff) who regularly handle pathogens or potentially infected specimens. In addition to technical staff, this may include cleaners, porters, secretaries and receptionists in laboratories. Staff working in academic or commercial research laboratories who handle clinical specimens or pathogens should also be included.

Routine vaccination

All staff should be up to date with their routine immunisations, e.g. tetanus, diphtheria, polio and MMR. The MMR vaccine is especially important for those who have contact with patients. Satisfactory evidence of protection would include documentation of having received two doses of MMR or having had positive antibody tests for measles and rubella.

In addition to routine vaccination, staff regularly handling faecal specimens who are likely to be exposed to polio viruses should be offered a booster with a polio-containing vaccine every ten years.

Individuals who may be exposed to diphtheria in microbiology laboratories and clinical infectious disease units should be tested and, if necessary, given a booster dose of a diphtheria-containing vaccine. An antibody test should be

performed at least three months after immunisation to confirm protective immunity and the individual should be given a booster dose at ten-year intervals thereafter. The cut-off level is 0.01IU/ml for those in routine diagnostic laboratories. For those handling or regularly exposed to toxigenic strains, a level of 0.1IU/ml should be achieved. Where a history of full diphtheria immunisation is not available, the primary course should be completed and an antibody test should be performed at least three months later to confirm protective immunity. Boosters should be given five years later and subsequently at ten-yearly intervals.

Selected vaccines

BCG

BCG is recommended for technical staff in microbiology and pathology departments, attendants in autopsy rooms and any others considered to be at high risk.

Hepatitis B

Hepatitis B vaccination is recommended for laboratory staff who may have direct contact with patients' blood or blood-stained body fluids or with patients' tissues. Antibody titres for hepatitis B should be checked one to four months after the completion of a primary course of vaccine. Such information allows appropriate decisions to be made concerning post-exposure prophylaxis following known or suspected exposure to the virus.

Staff handling specific organisms

For some infections, the probability that clinical specimens and environmental samples of UK origin contain the implicated organism, and therefore present any risk to staff, is extremely low. For these infections, routine immunisation of laboratory workers is not indicated. Staff handling or conducting research on specific organisms and those working in higher risk settings, such as reference laboratories or infectious disease hospitals, may have a level of exposure sufficient to justify vaccination. The following vaccines are recommended for those who work with the relevant organism and should be considered for those working with related organisms, as well as those in reference laboratories or specialist centres:

- hepatitis A
- Japanese encephalitis
- cholera
- meningococcal ACW135Y
- smallpox

- tick-borne encephalitis
- typhoid
- yellow fever
- influenza
- varicella.

Anthrax vaccine is also recommended for those who work with the organism, or those who handle specimens from potentially infected animals.

Rabies vaccination is recommended for those who work with the virus, or handle specimens from imported primates or other animals that may be infected.

Post-exposure management

Specific additional measures may sometimes be required following an incident where exposure to an infected individual, pathogen or contaminated instrument occurs. Advice should be sought from an occupational health department or from the local microbiologist or other appropriate consultant. Some advice on post-exposure management is contained in the relevant chapters or may be found in relevant guidelines (below).

Reference

Association of National Health Occupational Physicians (2004) *Immunisation of Healthcare Workers* (ANHOPS guidelines). www.anhops.org.uk/guidelines.asp

Further reading

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