Royal College of Nursing

Sharps safety

RCN Guidance for the Prevention and Management of sharps injuries in health and social care settings

CLINICAL PROFESSIONAL RESOURCE

Acknowledgements

Contributors

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The RCN UK Safety Representatives' Committee Rose Gallagher, RCN Professional Lead for Infection Prevention and Control, Leona Cameron, RCN Head of Health, Safety and Wellbeing, Kim Sunley, Health, Safety and Wellbeing National Officer.

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This document has been designed in collaboration with our members to ensure it meets most accessibility standards. However, if this does not fit your requirements, please contact corporate.communications@rcn.org.uk

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1. Introduction

The Royal College of Nursing (RCN) has a long history of campaigning on improved protection for nurses and health care workers exposed to the risk of needlestick and other sharps injuries. The implementation of the Health and Safety (Sharp Instruments in Healthcare) Regulations 2013, following the EU Directive (Council Directive 210/32/EU), was a major step forward in protecting our nursing and healthcare workforce. The RCN is committed to working with employers and regulators to ensure these and other regulations relating to occupational exposure to biological hazards are implemented complied with, thereby ensuring health and social care workers are better protected.

This guide has been developed primarily for RCN safety representatives, but other members of the nursing or midwifery team with a role in infection prevention and control (IPC), or who support the management of sharps injuries may also find it a useful reference. For example, this could apply to occupational health nurses and colleagues such as ward, department or care home managers with responsibility for managing health and safety in their care setting.

Everyone has a role to play in the prevention of sharps injuries to healthcare workers and other health and social care staff. From the chief executive and board directors, who have overall legal responsibility for the health and safety of their staff, to the individual nurse or health care worker – all have a duty to ensure that they protect themselves and others around them by safely using and disposing of sharp equipment.

What are sharps injuries?

The Sharp Instruments in Healthcare Regulations refer to medical sharps as being an object or instrument necessary for the exercise of specific health care activities which is able to cut, prick or cause injury. This includes equipment such as needles and scalpels. Injuries presenting a higher risk would be those where the sharp is contaminated with blood where there is the potential of transmitting infectious agents such as hepatitis B or C and human immunodeficiency virus (HIV).

Most sharps injuries can be prevented, and there are legal requirements placed on employers to take steps to prevent health care staff being exposed to infectious agents from sharps injuries, so far as it is reasonably practical to do so.

Who's at risk?

The short answer is that anyone who comes into contact with a sharp instrument previously used on a patient is at risk. But, perhaps unsurprisingly, the majority of sharps injuries occur to nurses and midwives because they are most likely to be carrying out procedures using sharps, such as giving injections, cannulating, or taking blood. Other primary users of sharps are doctors, paramedics, dentists, operating department assistants and phlebotomists. Laboratory workers, podiatrists, radiographers and physiotherapists may also be at risk.

In addition, ancillary staff who work in healthcare environments or handle healthcare waste or equipment such as domestics, porters, laundry workers and maintenance workers can be exposed to sharps injuries from needles that haven't been disposed of correctly by a primary user.

Analysis of incidents shows that the majority of injuries occur in wards, theatres, and accident and emergency departments. But, sharps injuries can also occur in community settings such as health centres, prisons and in patients' homes (PHE, 2014).

Clean sharps such as glass ampules can also present a risk of injury and infection caused by bacteria and steps should also be taken to prevent such injuries.

RCN survey of blood and body fluid exposures in 2020

A survey of RCN members (RCN 2021) identified that of the 7,500 respondents, 15% had sustained a sharps injury (SI) in the previous 12 months, a 50% increase on the previous survey in 2008. 3% of respondents reported experiencing more than one SI in the same period. The top three timings for SI occurrence were, “before procedure” (29%), “during procedure” (26%) and “disposal-related” (32%). SI sustained “before procedure” was >20% in almost all roles, workplaces, (including) bank staff and ethnicities of respondents. The survey was undertaken during the early stages of the covid-19 pandemic and therefore may represent high workloads, fatigue, stress and urgency of procedures at that time.

Data on when SI had occurred was analysed against role and ethnicity as reported by respondents. Analysis based on reported data showed that Bank/agency staff experienced more SI than staff who did not work as bank/agency. Compared to acute hospital staff care/nursing home staff and mental health practitioners reported more SI. Black and Minority Ethnic staff also reported higher SI posing many questions in relation to access to education and training and availability of safety sharps. The impact of the pandemic on clinical practice associated with sharps handling and occurrence of SI is not yet known and the RCN has called for more frequent data collection to gain better insight into the incidence of SI and risk factors to inform future prevention strategies.

When do accidents occur?

According to data from the RCN *Blood and Body Fluid Exposures Report* 2020 Public Health England data (PHE, 2014) and from the USA (NIOSH 2021)), sharps injuries occur:

- before the procedure
- during use
- after use, before disposal between steps in procedures
- during disposal
- while resheathing or recapping a needle.

Some procedures have a higher than average risk of causing a sharps injury. These include intra-vascular (IV) cannulation and venepuncture. Devices involved in high risk procedures are:

- IV cannulae
- winged steel needles (known as butterfly needles)
- hypodermic needles and syringes
- phlebotomy needles.

Lancets, scalpels, suture needles, razors, scissors, test tubes and even fragments of bones or patients’ teeth can all cause sharps injuries.

[i] Blood and body exposures in 2020 (RCN 2021) **rcn.org.uk/professional-development/publications/rcn-blood-and-bodily-fluid-exposures-uk-pub-009-687**

The risks of contracting an infection

In the UK a small, but significant number of health care workers including nurses, have developed potentially life-threatening diseases as a result of a sharps injury. Since the late 1990s at least 20 health care workers have contracted hepatitis C and there have been five documented cases of HIV.

Mucocutaneous exposure

The eye(s), the inside of the nose or mouth, or an area of non-intact skin of the health care worker is contaminated by blood or other body fluid.

Percutaneous exposure

The skin of the health care worker is cut or penetrated by a needle or other sharp object (for example, scalpel blade, trochar, bone fragment or tooth), which is contaminated with blood or other body fluid.

The risk of infection will depend on a number of factors. They include:

- the depth of the injury
- the type of sharp used (hollow bore needles are higher risk although subcutaneous needles also present a risk)
- whether the device was previously in the patient's vein or artery
- how infectious the patient is at the time of the injury.

When all these factors are taken into account, the risk of infection by a contaminated needle can be as high as (HPA, 2012):

- one in three for hepatitis B
- one in 30 for hepatitis C
- one in 300 for HIV.

Fortunately, the majority of sharp injuries don't lead to infections. However, because infections such as those caused by hepatitis B and C and HIV can take months to be diagnosed, health care staff can often endure weeks and months of anxiety while undergoing blood tests and the unpleasant and debilitating side effects of anti-viral drugs. Even when they don't cause life threatening infections, sharps injuries cause unnecessary stress, fear and suffering to health care workers and their families. For this reason all efforts must be made to prevent them in the first instance.

Case study (HSE, 2006)

A doctor suffered a needlestick injury during her work as a surgeon, which resulted in extended and debilitating treatment for a potential infection of hepatitis C. She was treated with interferon and other antiviral agents for six months. Treatments required constant monitoring of white cell counts and additional medication to stimulate bone marrow. Overall, the sufferer felt tired, nauseous, anaemic and anxious and has suffered from persistent shaking. She took three days off work as a result of the immediate injury, and was unable to carry out surgical work for a further six months while she waited for the results of her blood tests.

2. The law and sharps injuries

The Health and Safety at Work etc Act 1974, and the Health and Safety at Work (Northern Ireland) 1978 place a general duty on employers to ensure the health, safety and welfare of all their employees when they are work, so far as is reasonably practicable.

Expanding on the requirements of the Act/Order there are a number of Regulations which employers must adhere to. to prevent sharps injuries occurring to healthcare workers, including the Health and Safety (Sharp Instruments in Healthcare) Regulations 2013/ Health and Safety (Sharp Instruments in Healthcare) Regulations (Northern Ireland, and the Control of Substances Hazardous to Health (COSHH) Regulations. These regulations and other key Regulations are listed in the table on **the following page**.

Regulations	Key requirements	Application to sharps injuries
Health and Safety (Sharp Instruments in Healthcare) Regulations 2013 and the Health and Safety (Sharp Instruments in Healthcare) Regulations (Northern Ireland) 2013. **Control of Substances Hazardous to Health Regulations 2002 (COSHH) / Control of Substances Hazardous to Health (Northern Ireland) 2003.**	The Regulations implement the European Council Directive 2010/32/EU and require employers to ensure that risks from sharps injuries are adequately assessed and appropriate control measures are put in place. They build on existing law to provide specific detail on steps that employers must take Employers must identify any exposure to substances hazardous to health, assess the risks from exposure and put adequate measures in place to prevent or reduce and control the exposure (known as control measures) so far as is practicable to do so. There is also a requirement to provide suitable information and training and, where applicable, to monitor exposure, and provide health surveillance.	Assess the risks, identify appropriate control measures, including avoiding the use of sharps where practical to do so and using safer sharps devices. Providing appropriate information and training and consulting with employees. The Sharps Regulations build on the hierarchy of preventative control measures set out in the Control of substances Hazardous to Health (COSHH) Regulations. Assess the risk of exposure to employees from biological hazards including blood-borne viruses Where the risk of exposure cannot be prevented to put measures in place to adequately control exposure to such hazards. This includes safety-engineered devices, designing safe systems of work, and providing protective equipment. Information and training must be provided to all workers exposed to blood-borne viruses. Health surveillance in the form of follow-up blood tests is required where there has been exposure to blood-borne viruses.

Regulations	Key requirements	Application to sharps injuries
Management of Health and Safety at Work Regulations 1999/Management of Health and Safety at Work (Northern Ireland) Regulations 2000.	Employers must carry out suitable and sufficient risk assessments of all significant hazards in the workplace. Employers must also provide employees with information on the risks to their health and safety, preventative and protective measures in place and emergency procedures.	Employers to suitably and sufficiently assess the risk of sharps injuries from work procedures and activities. Employers must provide information and training on the risks of sharps injuries and what measures employees should take to reduce injury risk. Instruction and information on measures to be taken in the event of an injury occurring should be provided.
The Provision and Use of Work Equipment Regulations 1998 and the Provision and Use of Work Equipment (Northern Ireland.	Employers to select and provide suitable work equipment, in good working order and provide suitable information and instruction and training on safe use.	Provision of suitable equipment for healthcare workers for example safer sharp devices, sharps bins and instructions. information and training on how to use safely.
Reporting of Diseases Injuries and Dangerous Occurrences Regulations 2013 (RIDDOR)/The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (Northern Ireland) 1997.	Employers to report formally to the Health and Safety Executive (HSE) or the Health and Safety executive (Northern Ireland) certain types of occupationally acquired diseases, injuries and dangerous occurrences.	Employers are required to report formally known exposures to blood-borne viruses following a sharps injury for example where the patient is known to be hepatitis C positive. Cases where a health care worker develops a blood-borne virus as a result of a sharps injury or other occupational exposure need to be reported retrospectively if the employer is aware of them.
The Personal Protective Equipment at Work (Amendment) Regulations 2022 and the Personal Protective Equipment at Work Regulations (Northern Ireland) 1993.	Employers to assess, select, provide and maintain personal protective equipment.	Selection of suitable gloves, aprons and goggles where the risk of exposure to blood-borne viruses cannot be eliminated or reduced effectively through other measures.

Regulations	Key requirements	Application to sharps injuries
Health and Safety (First Aid) Regulations 1981 and The Health and Safety (First-Aid) Regulations (Northern Ireland) 1982.	Employers to provide adequate and appropriate equipment, facilities and personnel to ensure their employees receive immediate attention if they are injured or taken ill at work.	Provide first aid treatment following a sharps injury – including out-of-hours support.
Safety Representatives and Safety Committee Regulations. **1977 and the Safety Representatives and Safety Committee (Northern Ireland Regulations 1979.**	Employers to consult with safety representatives on matters affecting the health and safety of members. Employers to allow safety representatives paid time off to: • inspect documents relating to health and safety • investigate RIDDOR incidents and complaints from members • inspect the workplace.	Consult with safety representatives on the choice of equipment for example safety-engineered devices and gloves, and allow safety representatives paid time-off to inspect: • sharps injury reports • wards and departments for safe working practices and safe working environment to prevent sharps injuries.
BS EN ISO 23907:2 - 2019 - Reusable Sharps Containers	If procuring reusable sharps containers, employers should procure containers that complete with the minimum standard ISO 23907-2 which specifies requirements for reusable sharps containers intended to hold potentially hazardous sharps medical waste with or without sharps protection features and also specifies requirements for lifespan simulation, cleaning & decontamination, microbial validation, quality monitoring and performance testing.	Consult with a safety representative on the selection of the correct size and specification of reusable container relevant to the type of sharp item being disposed of.

Regulations	Key requirements	Application to sharps injuries
BS EN ISO 23907:1 - 2019 - Single Use Sharps Containers	If procuring single-use sharps containers, employers should procure containers that comply with the minimum standard ISO 23907-1 which specifies requirements for single-use sharps containers intended to hold potentially hazardous sharps medical waste with or without sharps protection features, e.g. scalpel blades, trocars, hypodermic needles and syringes.	Consult with a safety representative on the selection of the correct size and specification of single-use container relevant to the type of sharp item being disposed of. For containers that require pre-assembly, it is recommended that a staff member has signed and dated the container label to confirm the correct container assembly was completed.

The Health and Safety (Sharp Instruments in Healthcare) Regulations 2013

The Health and Safety (Sharp Instruments in Healthcare) Regulations 2013 came into force in the UK on the 11 May 2013. This was as a direct result of the European Directive 210//32/EU, which required member states to put into force regulation to comply with the directive.

Who has to comply with the regulations?

The regulations apply to all employers whose primary activity is to organise, manage and provide health care. This definition includes the NHS and independent sector providers, GP practices, hospices, nursing homes and includes situations where health care workers are providing care to people in their own homes.

Contractor organisations working for a health care employer, for example providing cleaning or maintenance services, are also required to take adequate measures to protect their staff. Health care employers must co-operate and share information with contractors to ensure the risks of sharps injuries are adequately controlled.

The Health and Safety Executive's information sheet, Health and Safety (Sharp Instruments in Healthcare) Regulations 2013 – guidance for employers and employees (HSE, 2013) provides further clarity on employer and employee groups covered by the regulations.

There are some anomalies with the regulations, for example, if a nurse is employed by a school or local authority they would not be covered nor would a nurse employed by the prison service. However, the requirements of other regulations including COSHH still apply. The RCN believes that the regulations should be extended to cover all health care workers regardless of their employer's main activity.

Underlying principles

There are a number of underlying principles which are not explicit in the Sharps regulations, but are a requirement under other UK health and safety legislation, such as the Management of Health and Safety at Work Regulations and COSHH, which should inform the development of strategies and policies to prevent sharps injuries. These include:

- the need for a well-trained, adequately resourced and secure health service workforce
- in accordance with their training, workers to take care, as far as possible, of their own health and safety and that of other persons affected by their actions
- prevention of exposure is a priority
- never assume there is no risk of exposure

Following a sharps injury

- the important role of safety representatives in prevention and the development of health and safety policies and practices
- the importance of partnership working and consultation with workers and their representatives on safe systems of work, selection of safety equipment and how best to carry out training, information and awareness raising
- the employers duty to ensure the health and safety of workers including psycho-social factors and work organisation, for example stress, shift work and working hours
- the need to promote a no blame culture to ensure that incident reporting procedures are followed and focus on systemic factors rather than individual mistakes.

The main requirements of the regulations

Employers have a duty to suitably and sufficiently assess the risk of sharps injuries under the COSHH regulations. Where risks are identified, the sharps in health care regulations requires the employer to take specific risk control measures, which are detailed below:

- where the employer has identified a risk, steps must be taken to avoid the unnecessary use of sharps (Regulation 5 (1)(a))
- where it is not reasonably practicable to avoid the use of medical sharps, the sharps regulations require employers to:
    - use safe sharps (incorporating protection mechanisms) where it is reasonably practicable to do so (Regulation 5(1) (b))
    - prevent the recapping of needles (Regulation 5 (1) (c))
    - place secure containers and instructions for safe disposal of medical sharps close to the work area (Regulation 5 (1) (d)

Definition of 'reasonably practicable'

'Reasonably practicable' implies that risks must be measured against the time or money required to avert them. The greater the risk the greater the amount of money and time that should be spent on reducing it.

The RCN believes that contaminated sharps and the risk of blood-borne viruses, in particular injuries from hollow bore needles justify expenditure on control measures such as safer needle devices. Such devices are often no more expensive than conventional devices.

- provide information to employees on the risks from injuries, relevant legal duties of employers and employees; good practice in preventing injuries; the benefits and drawbacks of vaccination and the support available to an injured person from their employer. The employer must work with safety representatives in developing and promoting this information (Regulation 6)

- provide appropriate training to ensure employees know how to work safely. The training must cover the correct use of safe sharps; safe use and disposal of sharps; what to do in the event of an injury and the employer's arrangements for health surveillance. (Regulation 6 (4))
- have arrangements in place in the event of a sharps injury. Which includes keeping a record of the incident; investigation of the circumstances of an incident and to take action to prevent a reoccurrence. The HSE advise that records of the incident should include details of the type of sharp involved, at what stage of the procedure the incident occurred and the severity of the injury
- ensure that injured employees who may have been exposed to a blood borne virus have immediate access to medical advice; are offered post exposure prophylaxis or other treatment as advised by a doctor and offered counselling where appropriate. (Regulation 7 (2))
- review, at suitable periods, the effectiveness of procedures and control measures (Regulation 5 (2)).

Duty on employees

The regulations also require employees to notify their employer of a sharps accident as soon as practicable after the event(Regulation 8). Clearly employers will need to have adequate processes in place to allow for prompt notification particularly for out of hours and community nurses. Employees must also be given information and training on reporting procedures (as required under Regulation 6).

Consequences of not complying with the law

Health and safety law is criminal law, and health care organisations can be subject to enforcement action if they fail to comply with the legal requirements relating to the prevention of sharps injuries. In 2010, a hospital trust was fined more than £20,000 after a health care worker contracted hepatitis C following a sharps injury. The trust was found guilty of breaching the Health and Safety at Work Act and the Control of Substances Hazardous to Health Regulations (HSE, 2010).

An HSE inspection initiative of 40 NHS organisations carried out in 2015/16 found that 83% failed to fully comply with the sharps regulations. 45% of the organisations were issued with HSE Improvement Notices, a form of enforcement action requiring organisations to take action to comply with the law within a certain time frame. These organisations would also have been charged a fee for the time HSE spent on making this intervention, currently at £163 per hour. (HSE 2016)

There are also a number of personal injury cases that have been taken under civil law, many of which are settled out of court. But, in 2009 the significant case of Fryers v Belfast Health and Social Care resulted in the High Court of Justice in Northern Ireland awarding £3,000 compensation to a hospital worker who sustained a needlestick injury. The worker was injured by a used needle that had been thrown into a yellow clinical waste bag. Treatment and a series of blood tests confirmed that there was no risk of developing an infection. However Mr Fryers went onto develop an adjustment disorder as a result of the stress caused by the injury.

Between 2012 and 2017, NHS Resolution received 1,833 incident claims for needlestick injuries in the NHS in England, costing at least £4 million. This is the equivalent of funding 125 band 5 nurses for one year (NHS Resolution 2017).

Other requirements on health care providers

There are a number of health care standards and guidelines put in place by the UK devolved administrations to protect patients and employees from health care associated infections.

Approved Code of Practice for the Control of Substances Hazardous to Health Regulations L5 sixth edition (HSE 2013)

The importance of protecting HCWs from sharps injuries and ensuring appropriate management is reinforced in the following guidance:

Code of Practice on the prevention and control of infections and related guidance (2015) England (currently under review)

National infection prevention and control manual for England
england.nhs.uk/publication/national-infection-prevention-and-control

National Infection Control Manual (Wales)
phw.nhs.wales/services-and-teams/harp/infection-prevention-and-control/nipcm/chapter-1-standard-infection-control-precautions-sicps

Code of Practice for the Prevention and Control of Healthcare Associated Infections (2014) Wales

Health Protection Scotland National Infection Prevention and Control Manual, Standard Infection Control Precautions

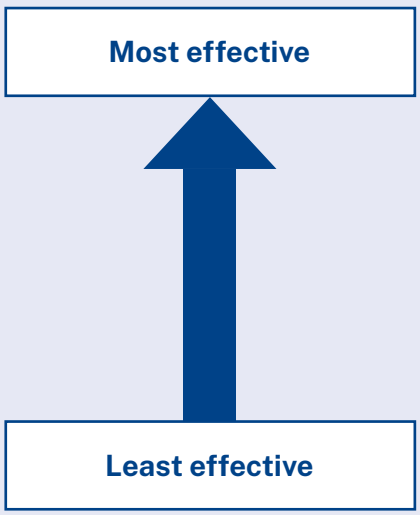
The Regulation and Quality Improvement Agency (Northern Ireland)
https://www.rqia.org.uk/

Northern Ireland Regional Infection prevention and Control Manual
niinfectioncontrolmanual.net

3. Implementing regulations to prevent and manage sharps injuries: from theory to practice

Measures to prevent sharps injuries can best be implemented using the principles of good practice in schedule 2A of the COSHH Regulations and the *Hierarchy of controls* and principles of prevention frameworks. The *Hierarchy of controls* focuses on the most effective measure of removing the hazard first, rather than relying on training, behavioural or changes to work practices and the use of protective equipment, mirroring the COSHH principles of good practice to ensure adequate control. Used alongside risk assessment, the hierarchy provides a framework for reducing the risks of injury. Further details of applying the hierarchy are given in the risk assessment section below.

Table 1: Hierarchy of controls applied to sharps injury prevention



Elimination or substitution
(for example, eliminate unnecessary injections)

Engineering controls
(for example, safer needle devices, sharps containers)

Administrative (policies and training programmes)

Work practices (standard precautions, no recapping)

Personal protective equipment
(gloves, masks, gowns etc.)

In reality it will be difficult, if not impossible, to eliminate all sharps from health care environments. So, the next effective step will be using engineering controls that include safer needle devices using innovative designs to limit the risk of injury. A combination of measures may also be necessary, for example, a safer needle device should only be introduced alongside training in its use.

Risk assessment

Risk assessment is central to UK and EU health and safety laws. The HSE provides a useful and simple model of risk assessment entitled **Five steps to risk assessment** (HSE, 2006). We have used this model to provide practical advice on how to assess the risks of sharps injuries.

Preparing the organisation

The organisation should have a strategic plan or direction to reduce sharps-related injuries, and commitment secured from senior management to put necessary funding and resources into the prevention of injuries. Prevention is cost-effective. Investment in improved safer technology and training will reduce the need for expensive follow-up and treatment of sharps injuries and potential compensation and legal costs (Grime, 2006).

Safety representatives should be consulted and fully involved in all discussions on initiatives to reduce sharps-related injuries.

Five steps to risk assessment and sharps injuries

Step 1: identify the hazards

Organisations should familiarise themselves with the requirements of regulations, approved codes of good practice, guidance and any supplementary information to support the risk assessment process (see page 19 for sources of further information).

In most hospital and health care environments there will be varying degrees of exposure to blood-borne viruses. The main blood-borne viruses of concern are hepatitis B and C and HIV.

Accidental injury by a sharp implement, such as a hollow bore needle contaminated with a blood-borne virus, can lead to the transmission of blood-borne viruses. While the risks of contracting a blood-borne virus are variable, the anxiety of having to go through blood tests and possible treatment can cause the worker a great deal of stress.

All sharps injuries are therefore a hazard that could lead to the risk of transmission of blood-borne viruses. Some injuries will be a higher risk than others.

- diagnostic and laboratory work
- mortuary work.

Groups that carry out the majority of procedures using sharps are those most at risk. These include: nurses, operating departmental practitioners (ODPs), phlebotomists, physiotherapists, doctors, health care assistants and laboratory technicians. In addition, cleaning staff will have a high exposure to risks if sharps are not properly disposed of. Community-based, as well as acute staff, may be injured by inappropriate use or non-disposal of sharps. There may also be issues when community staff are delivering care to patients who have previously self administered injection drugs such as insulin. There are also specific environmental regulations in place to cover the disposal of hazardous health care waste such as sharps in a community setting (DH, 2013).

Injury can occur with a wide range of items, but those with a higher risk of injury include:

- hollow bore hypodermic needles
- IV cannulae
- winged steel needles (butterfly)
- phlebotomy needles.

Existing data on sharps injury reports can be used to identify areas where high numbers of injuries are reported. However, there is often under reporting of sharps injuries in organisations, so figures should be treated with caution.

The matrix on page 23 entitled best practice risk assessment has been developed to support the risk assessment process by prioritising higher risk procedures and equipment.

Step 2: decide who might be harmed and how

The sharps regulations cover all workers that are under the managerial authority and supervision of health care employer/organisations. This extends not only to staff that are directly employed, but also some self-employed workers. For example, agency and bank nurses, any workers employed by organisations contracted to provide services for health care organisations such as cleaners and other ancillary staff. There are also requirements to protect student nurses while they are under the supervision of a health care provider.

There are many types of health care and hospital work that can expose individuals to the risk of sharps injuries. They include:

- clinical work – clinical procedures such as phlebotomy, cannulation, vaccination, acupuncture and surgical procedures
- ancillary services – cleaning, portering, hospital laundry and sterile supplies.

Step 3: evaluate the risks and decide on precautions

The law requires employers to do everything reasonably practicable to protect people from harm.

To help prioritise actions, the person carrying out the risk assessment process the steering group should review written arrangements and policies, identify what hazardous sharps equipment is being used and what presents the highest risk. The group assessor should consider whether the hazard can be removed altogether, and if not how the risks can be controlled so that harm is minimised.

The Hierarchy of controls on the prevention of sharps injuries (outlined in Table 1) is a way of implementing the law and best practice. The hierarchy is detailed below.

Elimination of hazard

Complete removal of a hazard from the workplace is the most effective way to control hazards; this approach should be used whenever possible. Examples include:

- removing sharps and needles when possible for example using needleless intravenous systems/needle free connectors
- eliminating all unnecessary injections
- eliminating unnecessary sharps such as towel clips.

Engineering controls

These are used to isolate or remove a hazard from a workplace. Examples include:

- adequate numbers of easily accessible sharps disposal containers
- environmental factors including good lighting and adequate space to carry out the procedure
- use of safety-engineered devices for all procedures (devices with needles that retract, sheath or blunt immediately after use).

Administrative controls

These are policies and practices that aim to limit exposure to the hazard. Examples include:

- health and safety responsibilities of all staff are clear, well co-ordinated and adequately resourced
- sharps injury prevention committee, which may be part of the health and safety committee
- a sharps policy that covers exposure prevention as well as treatment and follow-up
- reference to sharps injury prevention in infection control and procurement policies
- removal of all unsafe devices
- safe systems of work, particularly high risk areas such as theatres, obstetrics and emergency care
- consistent information and training that includes: safe systems of work; correct use and disposal of sharps; the use of safety-engineered medical devices incorporating sharps protection mechanisms; measures to be taken in the event of a sharps injury; and how to use personal protective equipment provided
- promotion of a no-blame culture
- incident reporting procedures and investigations that include feedback to staff/staff groups involved
- vaccination programmes and follow up procedures for example free hepatitis B.

Work practice controls

These controls aim to change the behaviour of workers to reduce exposure to occupational hazards. Examples include:

- no needle recapping or resheathing
- safe construction of sharps containers
- placing sharps containers at eye level and within arm's reach
- disposing of single-use sharps immediately after use in designated sharps containers
- sealing and discarding sharps containers when they are three-quarters full, this is for single-use sharps containers
- establishing means for the safe handling and disposal of sharps devices before the beginning of a procedure
- Exchange reusable sharps containers when the overfill protection (if fitted) is activated

Types of safety-engineered devices	Example
Needleless connector systems	Connectors use devices other than needles to connect one IV to another.
Protective sheaths	Sliding or hinged needle shields attached to disposable syringes.
Retractable needles or blades	Needles of sharps that retract into a syringe or back into the device.
Self-blunting	A blunt cannula seated inside a phlebotomy needle is advanced beyond the needle tip before the needle is withdrawn from the vein.
Reusable Sharps Containers	Safety engineered sharps containers that eliminate overfilling, have temporary and permanent closures, restrict hand access and comply with BS EN ISO 23907-2:2019.

Personal protective equipment (PPE)

Personal protective equipment provides barriers and filters between the worker and the hazard, in this case a sharp. Used properly it can prevent exposure to blood splashes, but will not prevent needlestick injuries or mucotaneous exposures. Examples include:

- eye goggles
- masks
- gloves.

There is evidence that gloves can reduce the risk of infection, in particular double-gloving in operating theatres. In these circumstances, the glove material will remove up to 86 per cent of the blood on the outside of the needle, and the inner glove will remove most blood not removed by the outer glove (Mast et al., 1993).

The decision as to whether or not to wear gloves must be taken on a risk assessment basis as part of a dynamic review of the individual health and care work circumstances at that time. The routine wearing of gloves to handle sharps (e.g. during vaccination/ immunisation, to administer an IV/IM drug etc) is not recommended (RCN 2020). World Health Organization (2010) Guidelines on drawing blood: best practice in phlebotomy, Geneva: WHO. Available at **https://www.who.int/publications/i/item/9789241599221**. RCN Practical and clinical guidance for vaccine administration. WHO 2010 ref **https://www.who.int/publications/i/item/9789241599252**

Indiscriminate and over use of gloves when not clinically indicated places both the HCW and patient at risk. Unnecessary glove use also undermines the implementation of 'Green' Net Zero strategies at the local level in line with national sustainability strategies such as the Greener NHS Plan **https://www.england.nhs.uk/greenernhs/**

Local Infection control and glove use policies and standard precautions (formerly known as universal precautions) will outline what PPE is needed in what circumstances.

Employers must ensure that staff and their safety representatives are involved in decisions to eliminate and control the risk of injury.

Step 4: record your findings and implement them

In organisations which employ more than 5 people, the findings of the organisational risk assessment should be documented and form part of the action plan to reduce the risks of injury. The action plans should be time sensitive. The risk assessment can be organisation-wide if it is small, such as a GP practice or ward-based in a larger health care site such as a hospital.

The results of the risk assessment should be shared with all workers identified as being at risk.

Where staff are based in the community there may be a need to liaise with GP services to ensure risk assessment findings are implemented.

Performance indicators such as the increase in the number of safety devices being purchased can be used to ensure that risk assessments are being implemented.

Step 5: review your assessment and update if necessary

Steps should be taken to periodically review the effectiveness of the risk assessment and control measures in place. This could be reactive after an incident report, a proactive audit or workplace inspection, or consist of analysing performance indicators, for example, the number of devices being purchased. It is recommended that a review date is set for a risk assessment.

Risk assessments should also be reviewed if changes take place to work practices or new equipment is introduced.

Selection and evaluation of safety-engineered devices

If a risk assessment indicates that there could be potential injuries leading to blood-borne infections because a hazard cannot be eliminated, the directive Sharps Regulations requires employers to provide medical devices that incorporate safety-engineered protection mechanisms, so far as is reasonably practicable. Safety-engineered devices are also known generically as safer needle devices or safety devices. These devices have a built-in safety feature to reduce the risk of a sharps injury before, during or after use. Devices can be passive or active. For example, passive devices have an automatic safety mechanism that is activated after use, such as when a cannula is withdrawn from a patient's vein. An active device needs to be manually activated by the member of staff.

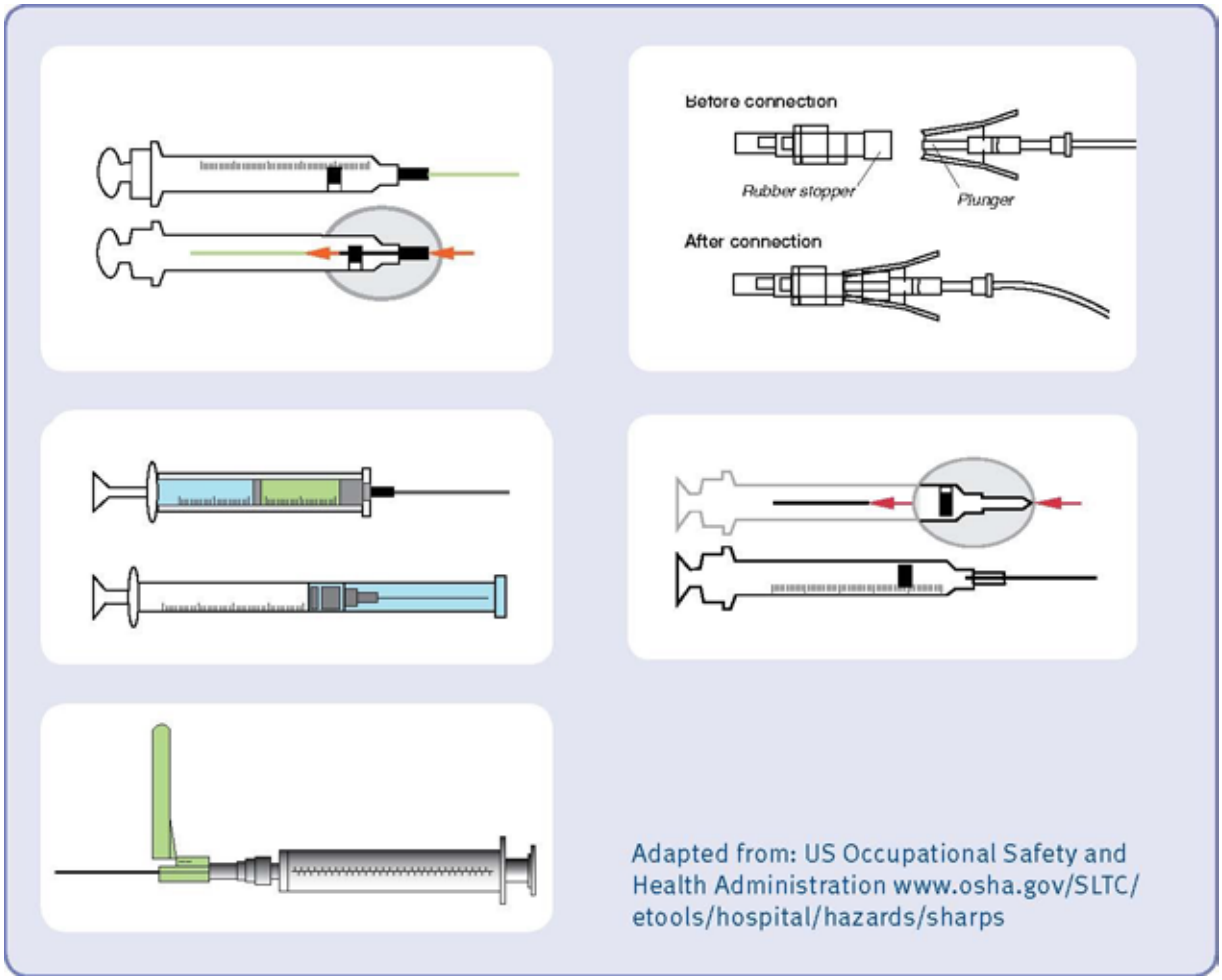
Examples of safety-engineered devices

When selecting and evaluating a safety device, the following features should be considered:

- the device must not compromise patient care
- the device must perform reliably
- the safety mechanism must be an integral part of the safety device, not a separate accessory
- it should be easy to use and require little change of technique
- activation of the device must be convenient and allow care give to maintain appropriate control over the procedure
- the device must not create other safety hazards or sources of blood exposures

- single handed or automatic activation is preferred
- activation must manifest itself by means of an audible, tactile or visual sign to the health professional
- not reversible when activated.

(Safer Needle Network/Partnership for Occupational Safety and Health in Health Care, 2010).



Safety representatives and safety device users should always be consulted and involved in their selection and trial, together with specialist staff such as clinical procurement specialists, and infection prevention and control nurses.

The market in safety devices is constantly evolving and new products are being developed. The latest in a line of new innovations is a needleless injection system where an injection is delivered by high pressure rather than a needle. Many suppliers will provide organisational support, change management processes and training when new devices are introduced to a workplace.

Policies

Organisations should have an up-to-date policy on the prevention and management of sharps injuries. The policy should contain the following:

- a strategic/corporate aim acknowledging that
  - sharps injuries are a major health and safety problem and a commitment to reduce sharps injuries
  - definitions and causes of sharps injuries
  - arrangements for the prevention of exposure to blood-borne viruses that cross reference to any other relevant policies such as: roles and responsibilities – risk assessment procedures and control measures to prevent exposure – education and training – procedures for supervising new and inexperienced staff – safe working practices (for example no recapping) – safe disposal procedures – procedures in the event of an injury – post-exposure treatments – immunisation procedures – reporting procedures
  - how the implementation and effectiveness of the policy and risk assessments will be reviewed and evaluated
  - how the policy and associated information will be communicated to all staff including new, temporary staff and contractors such as ancillary services.

Procurement

Safe clinical practice is dependent on the procurement of products that meet the clinical needs of HCWs using them. For the prevention of sharps injuries this includes:

- safety engineered devices
- needles/syringes/vacutainer systems
- sharps boxes
- sustainability

It is critical that HCWs who use these products are engaged in procurement decisions to ensure that both the clinical and technical specifications are fit for purpose to inform provision of the most suitable product based on the needs of users.

Sustainability

Sustainability is evolving as a priority area for action in the health and care sector. Healthcare is the 5th largest greenhouse gas producer globally and therefore action to reduce its climate warming emissions through procurement, transport, waste management and energy consumption are key (Healthcare without Harm, 2019). The NHS in England is committed to meeting ‘net-zero’ by 2040 with an ambition to reach 80% reductions by 2036-2039 (NHS England and Improvement 2020) as its commitment to meeting the requirements of the Climate Change Act 2008. Historically most sharp items have been incinerated using disposable sharps containers. Awareness of the environmental impact through plastic production and use, air pollution and loss of metal recovery is increasing with the introduction of reusable sharps boxes to support local sustainability or ‘green’ plans.

Sustainable options now exist to support users of sharps in healthcare settings in the form of reusable sharps containers. Evidence on the potential benefits of reusable sharps containers is growing. For example Grimmond et al (2021) found when 40 NHS trusts converted from single-use to reusable sharps containers, this contributed to a combined global warming potential reduction of 83.9%, 3267.4 tonnes CO2 e.

Whilst it is imperative that any product meets users needs (e.g. size, point of use, weight, design etc) increasingly the consideration of reusable sharps containers is an option.

Note: It is essential when procuring a reusable sharps system that it is recommended that these should comply with BS EN ISO 23907-2:2019.

Training and information

The directive and other Sharps, and other regulations require employers to provide suitable and sufficient training, information and instruction on the prevention of sharps injuries and the risk of blood-borne viruses. Training, information and instruction should occur on induction for new and temporary staff/students. It should also be repeated when new technology such as safer needle devices or new procedures are introduced.

Incident reporting

It is widely recognised that there are high levels of under reporting of sharps injuries. There are many theories why nurses and other health care staff do not report injuries. But, it is vital that injuries are reported to ensure that appropriate follow-up treatment is given to the injured person, and that patients are not put at risk if the injured health care worker goes on to perform exposure-prone procedures. Also, the cause of the incident must be examined and any necessary measures put in place to reduce the risk of further injury. Employers are also less likely to invest in risk reduction measures where there are low levels of incident reporting.

The Sharps Regulations calls for sharps injuries to be properly investigated in order to identify the root cause of the incident, including systemic failures. Failings could include, for example: a lack of training or supervision for newly-qualified staff; a lack of safety equipment; staff shortages/pressure of work; and poor physical environment (space and lighting). Safety representatives should be involved in incident investigations.

Employers should make efforts to encourage and emphasise the importance of incident reporting and first aid during training and other methods of communication such as newsletters, screen savers and posters.

Employers must comply with the requirements of the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) 2013 or the Reporting of Injuries, Diseases and Dangerous Occurrences (Norther Ireland) Regulations 1997 relating to sharps injuries and report sharps injuries formally to the HSE or HSENI. They must do this when the source patient is known to carry a blood-borne virus, is subsequently found to have a blood-borne virus, or the health care worker develops a virus following a sharps injury.

First aid

Organisations must have first aid procedures in place so that staff know what to do in the event of an injury and who to report an incident to. Organisations must communicate these procedures to all staff at risk of sharps injuries, including new and temporary staff, contractors and students.

Current first aid measures are to encourage the wound to bleed (but do not suck) and rinse thoroughly under running water (do not scrub). If running water is not available, cleansing wipes provided in first aid kits should be used. Wounds should be covered with a dry plaster/dressing.

Follow-up

The Sharps Regulations make clear that urgent medical advice should be sought (for example from your occupational health service) as effective prophylaxis are available. In addition counselling should be made available for the injured employee. Comprehensive Guidance on for the follow-up and treatment protocols for staff exposed, or potentially exposed to a blood-borne virus after a sharps injury. Comprehensive guidance is available from the UKHSA (UKHSA 2021).

The key is the promptness of follow-up advice and support, particularly for nurses and health care assistants working out-of-hours, in community settings or for the independent sector. The risk of infection must be assessed by a specialist, and post-exposure prophylaxis (PEP) treatment protocols started immediately after the injury if advised.

Employers need to communicate the importance of follow-up and treatment, and attending all appointments for blood tests. Staff must be released from work to attend the follow-up appointments.

Good Practice

Health and Safety Executive

During their inspection initiative, in addition to identifying failings, the HSE identified examples of good practice. These include:

- Having infection control staff working closely with health and safety staff and using occupational health at a strategic level is potentially a good mode for maintaining continuous improvement in the prevention of sharp injuries
- Notices around the organisation promoting safer sharps
- Procurement has a process in place to remove and replace traditional sharps with a safe device where reasonably practicable
- Identifying high risk areas from internal data, and having systems in placed to review these areas
- Where it was identified that there was no suitable safer sharp device available, and no safety devices needed to be used, those were stored in the relevant area together with the risk assessment and procedure for working with those devices. They were only available as non-stock items, and approval was needed before purchasing

- Learning points from an analyses of incidents was included in training and other information sources
- Employees' written instructions were included as part of mandatory training. HSE 2016.

Insulin injections and blood lancets

Most people with diabetes will be able to check their own blood sugar and administer insulin or, in some cases this is done by their carer. Under the regulations, the equipment they use does not need to be safety equipment. However, on occasions when it is necessary for nursing staff to administer insulin or check blood sugars with lancets, nursing staff must have access to safety equipment. It is their employers responsibility to ensure the correct equipment is in place. Further evidence based recommendations on insulin administration and needle safety can be found in **trenddiabetes.online/portfolio/best-practice-guideline-to-support-correct-injection-technique-in-diabetes-care**

4. Taking action

What employers should be doing

Employers should be aware of their legal duties under The Sharps Regulations and other existing legislation and the new regulations, which emphasise carrying out suitable and sufficient risk assessments on the prevention of sharps injuries. There should be a strategic level commitment to reducing sharps injuries. Employers need to work with competent staff such as occupational health, infection prevention and control and health and safety workers to:

- review current policies and procedures and risk assessments to ensure that they are complying with existing legislation and the new directive
- assess the need to implement further control measures including safety-engineered devices to reduce the risk of injuries
- where indicated by risk assessments introduce new safety measures, equipment and information and training to prevent sharps injuries among staff
- ensure adequate resources are available to support the review and the purchase and introduction of new safety measures.

The RCN expects this level of partnership-working to continue at a local level too. Safety representatives should be fully involved in any workplace initiatives to improve sharps safety, and given the time off that is necessary to attend meetings on sharps safety and carry out inspections.

What can safety representatives do?

- Ask for the issue of sharps safety and the sharps regulations to be put on your health and safety committee agenda.
- At the health and safety committee meeting ask what steps your employer is taking to ensure that they comply with the new regulations?
- Carry out themed workplace inspections and/or surveys of members to examine the impact of local policies, procedures and risk assessments.
- Ensure that you are consulted and fully involved in any work on the prevention of sharps injuries involved in policy and risk assessment reviews, purchasing decisions on safety devices and consulted on the development of training programmes.
- Ensure that employers are following the hierarchy of controls when carrying out risk assessments.
- Work with RCN learning representatives to ensure that training and education programmes on the prevention and management of sharps injuries are fit-for-purpose.
- Encourage members to report sharps incidents and seek follow-up treatment.
- Work with your employer to promote incident reporting for example through joint communications and initiatives and the provision of information in relation to policies and procedures.
- Ensure that all nursing staff have access to immediate follow-up support and, where appropriate, counselling following a sharps injury.

What nurses and other health care workers should be doing

- Ensure they are familiar with local policies, procedures and risk assessments and are following safe systems of work.
- Do not recap or resheath used needles.
- Report any concerns about sharps safety through their local RCN safety representative.
- Report all sharps injuries following local reporting procedures, and ensure that the local RCN safety representative is made aware of injuries.
- Get vaccinated against hepatitis B.

5. References

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RCN (2022) *Tools of the Trade* **rcn.org.uk/Professional-Development/publications/tools-of-the-trade-uk-pub-010-218**

RCN *Practical and clinical guidance for vaccine administration* **https://www.rcn.org.uk/clinical-topics/public-health/immunisation/practical-and-clinical-guidance-for-vaccine-administration** [accessed 20th July 2020]. Needs login.

UK Guideline for the use of HIV Post-Exposure Prophylaxis 2021 Post consultation version available from UK Health Security Agency

6. Further information and resources

Health and Safety Executive (HSE)
Information on sharps injuries and links to relevant legislation and documents on the HSE's health sector web pages: **www.hse.gov.uk**

Health and Safety Executive Northern Ireland
www.HSENI.gov.uk Information on sharps injuries and links to relevant Northern Ireland legislation

Safer Needles Network
The RCN is a member of the Safer Needles Network, a group that was established in early 2000 to campaign for prevention of needlestick and sharps injuries. There are a number of resources and links to research papers on their web pages: **saferneedles.org.uk**

NHS Employers
The RCN has worked closely with NHS Employers, the Safer Needles Network and other health care trade unions to develop information and resources on the prevention of sharps injuries, in accordance with the Health and Safety (Sharp Instruments in Healthcare) Regulations 2013. There are a number of resources and examples of good practice on preventing sharps injuries on the health and safety section of NHS Employers website: **www.nhsemployers.org**

European Agency for Safety and Health at Work (EU-OSHA)
EU-OSHA, the official health and safety agency for the European Union, has developed risk assessment guidelines for sharps injuries see: **http://osha.europa.eu/en/sector/health care**

European Biosafety Network
The European Biosafety Network was established in 2010 following the adoption of the European Directive on Preventing Sharps Injuries in Hospitals and Healthcare Settings (2010/32/EU) with a commitment to improve the safety of patients and healthcare and non-healthcare workers. The network promotes and encourages the effective practical and legislative implementation of the Sharps Directive and also the clauses in the MDR which prevent sharps injuries by the use of safety mechanisms by working with key EU stakeholders and international standards bodies and raising awareness, providing guidance, the dissemination of research and information and effective reporting and monitoring. Further information and resources can be accessed at **https://www.europeanbiosafetynetwork.eu**

Evaluation checklists
There are a number of evaluation checklists available that can be adapted for local use. Useful resources can be found at: The International Sharps Injury Prevention Society has resources on evaluating various devices: **www.isips.org/ispef.php**

Centers for Disease Control and Prevention (2010)

Workbook for designing, implementing and evaluating a sharps injury prevention programme. Available at: **www.cdc.gov**

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7. Appendix: safety representatives' checklist

The inspection report can be presented to workplace inspection to assess organisational and/or ward/departmental level compliance with safety committee, regulations and associated best practice.

The inspection can be carried out through a mixture of examination of the RCN Safety representatives' handbook and online policies, observational or walk-through **rcn.org.uk/publications** should be used for inspection and discussions with members and to report back any concerns.

	Organisational level	Yes/No	Don't know/notes
1	Are sharps injuries identified on the corporate risk register?		
2	Is there an organisation-wide policy on the prevention and management of sharps injuries?		
3	Is the policy up to date and does it cover the issues outlined on page 15 of the RCN's sharps guidance?		
4	Is the prevention of sharps injuries on the agenda of the health and safety committee?		
5	Is data on sharps injuries reported to the health and safety committee?		
6	Are safety representatives consulted on measures to protect members from sharps injuries?		
7	Has a sub-committee or working group been set up to review policies and risk assessments in light of the sharps regulations?		
8	Is there partnership working between occupational health, infection prevention and control, procurement and health and safety advisers/risk managers on this issue?		
9	Do risk assessments exist for sharps injuries at a ward/departmental level or for procedures?		
10	Are all staff at risk of sharps injury identified in risk assessments?		
11	Have control measures been introduced in line with the hierarchy of controls (on page 14) ?		

	Organisational level	Yes/No	Don't know/notes
12	Is training provided for all at risk staff on the prevention of sharps injuries, safe use of equipment, reporting and first aid measures?		
13	Are sharps injuries routinely investigated and root causes identified?		
14	Are there follow up procedures in place for dealing with sharps injuries?		
15	Are there follow up procedures in place for sharps injuries that occur out of normal working hours?		
16	Are frontline managers aware of their responsibilities to risk assess and implement safety measures?		
17	Do staff know how and who to report a sharps injury to?		
18	Do staff feel able to report incidents without fear of repercussions?		
19	Are staff given feedback on the results of incident investigations?		
20	Are staff offered hepatitis B vaccination?		
21	Are staff able to attend training on sharps safety?		
22	Are accident reporting systems (online or hardcopy) readily available for staff?		
23	Where possible, are sharps and needles replaced with needless systems?		
24	Are safer needle devices used instead of conventional needles devices?		

Sample risk assessment on sharps injuries

Department: All clinical areas			Activity: heparin injections		
What are the hazards?	**Who might be harmed and how?**	**What are we already doing?**	**What further action needs to be taken?**	**Action is taken by**	**When is action taken?**
Sharps injury.	Nurses who administer the injection.	Training for clinical staffon induction and annual refresher that include ssession on prevention of sharps injuries. Training for clinicalstaff on safe injection technique. No recapping of used.	Evaluate safety devices for administering sub cut heparin. Roll out of safety devices and staff training on their safe use.	Sharps safety sub-committee. Clinical nurse managers/ infection control link nurses (with support from manufacturers).	November 2013 – January 2014

Best practice risk assessment

Table by Prof. Dr. Ing. Andreas Wittmann University of Wuppertal Faculty of Safety Engineering, Occupational Medicine, Occupational Physiology and Infection Control.

RISK by amount of blood	Potentially fatal	eg central venous catheter	eg peripheral vein catheters	eg blood drawing needle	eg butterfly for blood drawing
	Serious		eg intra muscular syringes	eg port catheters	eg scalpel blades
	Medium			eg sub cutaneous syringes	eg lancets, herapin syringes
	Low	eg needles for acupuncture			eg pens for insulin
		Seldom	**Sometimes**	**Often**	**Frequently**
	Exposure per device				

Legend

Risk is not acceptable. Action to address the risk is very urgently required.

Risk is not acceptable. Action to address the risk is required.

Risk is acceptable. Standard precautions are appropriate.

RCN quality assurance

Publication

This is an RCN practice guidance. Practice guidance are evidence-based consensus documents, used to guide decisions about appropriate care of an individual, family or population in a specific context.

Description

Sharps are commonly used in the delivery of health and care and can be found in all care settings. Sharps, whilst necessary can result in harm to the user with a risk of infection if an injury is sustained after use on a patient/person. This guide has been developed primarily for RCN safety representatives, but other members of the nursing or midwifery team with a role in infection prevention and control (IPC), who support the management of sharps injuries may also find it a useful reference.

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The Nine Quality Standards

This publication has met the nine quality standards of the quality framework for RCN professional publications. For more information, or to request further details on how the nine quality standards have been met in relation to this particular professional publication, please contact **publicationsfeedback@rcn.org.uk**

Evaluation

The authors would value any feedback you have about this publication. Please contact **publicationsfeedback@rcn.org.uk** clearly stating which publication you are commenting on.

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